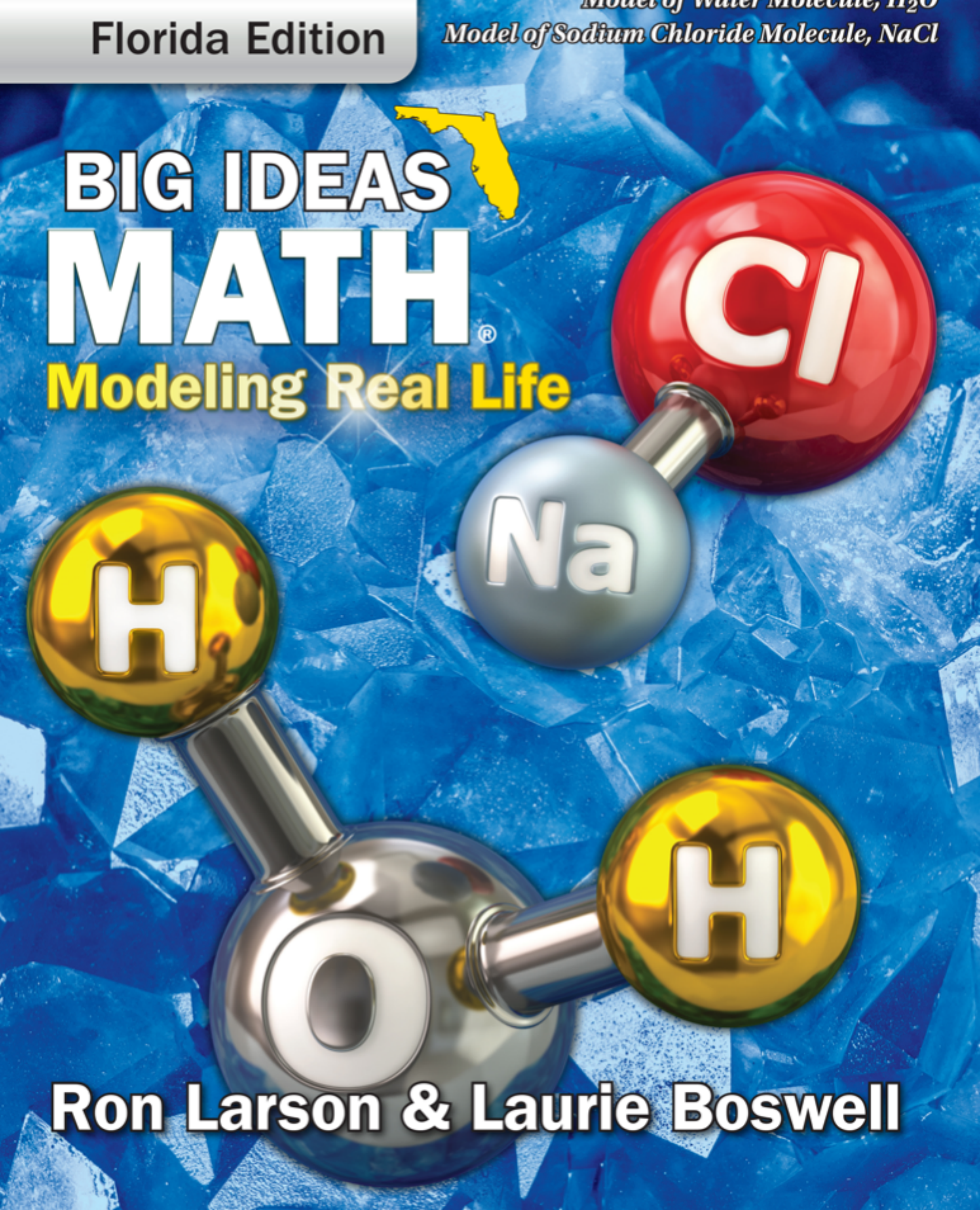
Florida Edition

Model of Water Molecule, H_2O

Model of Sodium Chloride Molecule, NaCl

BIG IDEAS MATH®

Modeling Real Life



Ron Larson & Laurie Boswell

1 Place Value Concepts

- Birds are classified as vertebrates in the animal kingdom. What are some types of birds?
- Why is it important to know the population size of different animal species? Is the population size an estimate or an actual number?

Chapter Learning Target:
Understand place value.

Chapter Success Criteria:
- I can define the value of numbers.
- I can explain how to use symbols to compare two numbers.
- I can compare the values of identical digits in a number.
- I can read and write multi-digit numbers in multiple forms.



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Name _____

1 Vocabulary

Review Words

ones place
hundredths place
tens place
tenths place

Organize It

Use the review words to complete the graphic organizer.

_____ 83.57	_____ 83.57
Place Value	
_____ 83.57	_____ 83.57

Define It

Use your vocabulary cards to identify the word. Find the word in the word search.

1. The repeated factor in a power
2. The number of times the base is used as a factor
3. Each group of three digits separated by commas in a multi-digit number
4. A product of repeated factors

T	U	R	Z	A	P	F	I	N	O
C	P	E	H	D	U	X	M	R	M
M	E	W	X	Q	T	B	E	S	J
D	R		G	P	A	W	R	A	I
E	I	A	N	L	O	B	T	U	P
X	O	S	E	P	G	N	C	X	E
K	D	Y	L	W	R	F	E	K	H
I	B	A	S	E	V	O	S	N	D
D	G	N	U	P	I	A	W	R	T

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Chapter 1 Vocabulary Cards

base

exponent

period

power

thousandth

thousandths place

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The number of times the base of a power is used as a factor

exponent

$10 \times 10 \times 10 \times 10 \times 10 = 10^5$

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The repeated factor in a power

base

$10 \times 10 \times 10 \times 10 \times 10 = 10^5$

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A product of repeated factors

$10 \times 10 \times 10 \times 10 \times 10 = 10^5$

power

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Each group of three digits separated by commas in a multi-digit number

period period

Thousands Period			Ones Period		
Hundreds	Tens	Ones	Hundreds	Tens	Ones
5	3	8,	7	7	4

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The third place to the right of the decimal point

0.001

thousandths place

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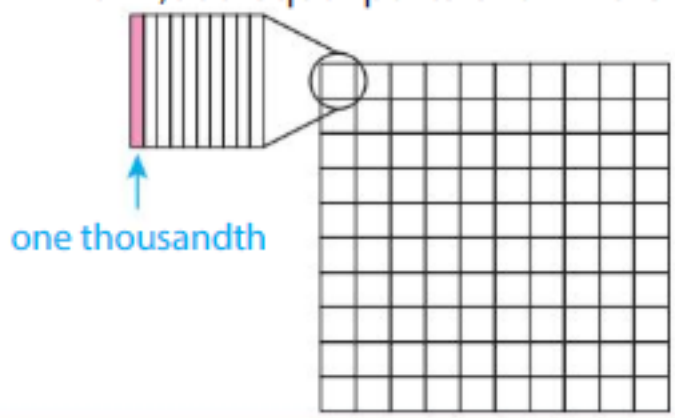
1 of 1,000 equal parts of a whole



one thousandth

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Name _____

Place Value Patterns 1.1

Learning Target: Understand the relationship between place value positions.

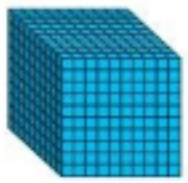
Success Criteria:

- I can find a number that is 10 times as much as a given number.
- I can find a number that is $\frac{1}{10}$ of a given number.
- I can describe how positions in a place value chart are related.

FLORIDA STANDARDS
MAFS.5.NBT.1.1

Explore and Grow

Write the whole number represented by each base ten block. Then use the base ten blocks to complete the table.

Cube	Flat	Rod	Unit
			
_____	_____	_____	_____

Base Ten Block	Represents	Base Ten Block
Rod	_____ times as much as	Unit
Flat	_____ times as much as	Rod
Cube	_____ times as much as	Flat
Unit	$\frac{\square}{\square}$ of	Rod
Rod	$\frac{\square}{\square}$ of	Flat
Flat	$\frac{\square}{\square}$ of	Cube

MP **Reasoning** Describe the patterns you see in a number as you move from one place value position to another place value position.

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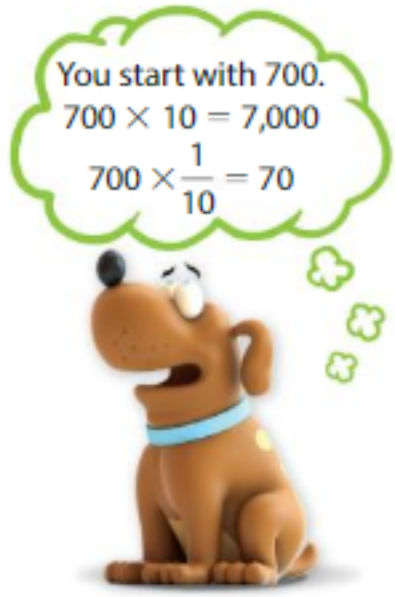
Think and Grow: Place Value Patterns

Key Idea You can use a place value chart to help write numbers that are 10 times as great as a number or $\frac{1}{10}$ of a number.

Thousands Period			Ones Period		
Hundreds	Tens	Ones	Hundreds	Tens	Ones
			7	0	0
		7,	0	0	0
				7	0

7,000 is 10 times as great as 700.

70 is $\frac{1}{10}$ of 700.



Example Complete the statements.

Thousands Period			Ones Period		
Hundreds	Tens	Ones	Hundreds	Tens	Ones
		5,	0	0	0

10 times as great as 5,000

$\frac{1}{10}$ of 5,000

_____ is 10 times as great as 5,000.

_____ is $\frac{1}{10}$ of 5,000.

Show and Grow

1. Complete the statements.

Thousands Period			Ones Period		
Hundreds	Tens	Ones	Hundreds	Tens	Ones
	9	0,	0	0	0

_____ is 10 times as great as 90,000.

_____ is $\frac{1}{10}$ of 90,000.

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Name _____

Apply and Grow: Practice

Use a place value chart to answer the question.

2. What number is 10 times as great as 6,000?

3. What number is $\frac{1}{10}$ of 300?

4. 80 is 10 times as great as what number?

5. 40,000 is $\frac{1}{10}$ of what number?

Complete the table.

6.

Number	10 times as great as the number	$\frac{1}{10}$ of the number
10		
400		
7,000		
50,000		

7.

Number	10 times as great as the number	$\frac{1}{10}$ of the number
200		
30,000		
90		
8,000		

8. MP **Patterns** Describe the relationship between any place value position and the next greater place value position.

MP **Number Sense** Write whether the statement is *true* or *false*. If false, explain why.

9. 600 is 100 times as great as 60,000.

_____

10. 9,000 is 1,000 times as great as 9.

_____

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Think and Grow: Modeling Real Life

Example Which state is about 10 times larger than Georgia?

The approximate land area of Georgia is 60,000 square miles.

Use a place value chart to find the number that is 10 times as great as 60,000.

State/District	Approximate Land Area (square miles)
Alaska	600,000
District of Columbia	60
Georgia	60,000
Hawaii	6,000
Maryland	10,000
Rhode Island	1,000
Wyoming	100,000

Thousands Period			Ones Period		
Hundreds	Tens	Ones	Hundreds	Tens	Ones
	6	0,	0	0	0
6	0	0,	0	0	0

_____ is 10 times as great as 60,000.

The land area of _____ is about 600,000 square miles.

So, _____ is about 10 times larger than Georgia.

Show and Grow

Use the table above.

11. Which state is about 10 times larger than Hawaii?

12. Which state is about $\frac{1}{10}$ the size of Wyoming?

13. **DIG DEEPER!** Which state is about 100 times larger than the District of Columbia?

14. **DIG DEEPER!** A mother rhinoceros weighs 2 tons. Her baby weighs $\frac{1}{10}$ as much as her. What is the weight of the baby rhinoceros, in pounds?



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Homework & Practice 1.1

Learning Target: Understand the relationship between place value positions.

Example Complete the statements.

Thousands Period			Ones Period		
Hundreds	Tens	Ones	Hundreds	Tens	Ones
			9	0	0
		9,	0	0	0
				9	0

10 times as great as 900

$\frac{1}{10}$ of 900

9,000 is 10 times as great as 900.

90 is $\frac{1}{10}$ of 900.

Complete the statements.

Thousands Period			Ones Period		
Hundreds	Tens	Ones	Hundreds	Tens	Ones
		2,	0	0	0

1. _____ is 10 times as great as 2,000.

2. _____ is $\frac{1}{10}$ of 2,000.

Use a place value chart to answer the question.

3. What number is 10 times as great as 50?

4. What number is $\frac{1}{10}$ of 4,000?

5. 800 is $\frac{1}{10}$ of what number?

6. 60,000 is 10 times as great as what number?

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Complete the table.

7.

Number	10 times as great as the number	$\frac{1}{10}$ of the number
40		
500		
1,000		
80,000		

8.

Number	10 times as great as the number	$\frac{1}{10}$ of the number
70,000		
20		
3,000		
100		

9. MP **Patterns** Describe the relationship between any place value position and the next lesser place value position.

10. **YOU BE THE TEACHER** Your friend says 6,700 is $\frac{1}{10}$ of 67,000. Is your friend correct? Explain.

Use the table.

11. **Modeling Real Life** Which city's population is about 10 times the population of Newark?

12. **Modeling Real Life** Which city's population is about $\frac{1}{10}$ the population of Marina?

California City	Approximate Population
Amador	200
Angels	4,000
Chula Vista	200,000
Del Ray Oaks	2,000
Marina	20,000
Newark	40,000
Oakland	400,000

13. **DIG DEEPER!** An archaeologist finds a ceramic bowl that is about 400,000 years old. He finds a different artifact that is $\frac{1}{100}$ times as old as the ceramic bowl. How much older is the ceramic bowl than the other artifact?

Review & Refresh

Find the factor pairs for the number.

14. 9

15. 24

16. 15

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Name _____

Place Value with Whole Numbers

1.2

Learning Target: Write multi-digit numbers in different forms and compare the values of digits.

Success Criteria:

- I can identify the value of a digit in a multi-digit number.
- I can write multi-digit numbers in different forms.
- I can compare the values of two identical digits in a multi-digit number.

FLORIDA STANDARDS
MAFS.5.NBT.1.1

Explore and Grow

Model the number. Draw your model.
Then write the value of each digit.

4,442

Thousands	Hundreds	Tens	Ones
_____	_____	_____	_____

Compare the values of the 4s.

MP **Repeated Reasoning** Is the value of the 4 in the tens place 10 times as much as the value of the 2 in the ones place? Explain.

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Think and Grow: Place Value with Whole Numbers

Key Idea A place value chart shows the value of each digit in a number. It also shows how the place values are grouped. Each group of three digits is called a **period**. In a number, periods are separated by commas.

Millions Period			Thousands Period			Ones Period		
Hundreds	Tens	Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones
		1,	5	3	8,	7	7	4

		1 × 1,000,000	5 × 100,000	3 × 10,000	8 × 1,000	7 × 100	7 × 10	4 × 1
		1,000,000	500,000	30,000	8,000	700	70	4

Example Write the number in standard form, word form, and expanded form.

Thousands Period			Ones Period		
Hundreds	Tens	Ones	Hundreds	Tens	Ones
4	6	6,	9	0	0

Standard form:

Word form:

Expanded form:

4 × 100,000 + _____ × _____ + _____ × _____ + _____ × _____

Show and Grow

Write the number in two other forms.

1. Standard form: 78,300

Word form:

Expanded form:

2. Standard form:

Word form: three hundred fifty thousand, fifty-eight

Expanded form:

3. Compare the values of the 6s in the number 466,900.

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Name _____

Apply and Grow: Practice

Write the number in two other forms.

4. Standard form:

Word form:

Expanded form: $6 \times 100{,}000 + 8 \times 1{,}000 + 4 \times 100 + 5 \times 10 + 9 \times 1$

5. Standard form: 45,006,702

Word form:

Expanded form:

6. Compare the values of the 7s in the number 4,877,034.

7. Compare the values of the 3s in the number 5,338.

Compare.

8. 8,046 ◯ 8,460

9. 28,517 ◯ 28,509

10. 5,854,331 ◯ 5,854,231

11. The white truffle is the world's most expensive edible fungus, which costs up to three thousand dollars per kilogram. Write this number in standard form.



12. **YOU BE THE TEACHER** Your friend says that in the number 45,951, one 5 is 10 times as great as the other 5. Is your friend correct? Explain.

13. **Logic** Newton is thinking of a 6-digit number in which all of the digits are the same. The value of the digit in the thousands place is 8,000. What is Newton's number?

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Think and Grow: Modeling Real Life

Example Compare the values of the 3s in Jupiter's average distance from the Sun.



Use a place value chart to help you find the value of each 3.

Planet	Average Distance from the Sun (miles)
Earth	92,956,050
Jupiter	483,638,564
Mars	141,637,725
Mercury	35,983,125
Saturn	886,489,415
Venus	67,238,251

Millions Period			Thousands Period			Ones Period		
Hundreds	Tens	Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones
4	8	3,	6	3	8,	5	6	4
		3,000,000		30,000				

Each place value is 10 times as great as the place value to its right. The digits are two places apart. So, multiply 30,000 by $10 \times 10 = 100$.

So, the value of the 3 in the millions place is _____ times the value of the 3 in the ten thousands place.

Show and Grow

Use the table above.

14. Compare the values of the 7s in Mars's average distance from the Sun.

15. Compare the values of the 4s in Saturn's average distance from the Sun.

16. **DIG DEEPER!** An organization wants to donate all of the money raised through fundraisers and raffles to a children's charity. Complete the donation check.

Money Raised	
Event	Amount
Fundraisers	$194,918
Raffles	$35,187



word form

standard form

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Name _____

Homework & Practice 1.2

Learning Target: Write multi-digit numbers in different forms and compare the values of digits.

Example Write the number in standard form, word form, and expanded form.

Thousands Period			Ones Period		
Hundreds	Tens	Ones	Hundreds	Tens	Ones
5	0	9,	0	2	7

Standard form: 509,027

Word form: five hundred nine thousand, twenty-seven

Expanded form: 5 × 100,000 + 9 × 1,000 + 2 × 10 + 7 × 1

Write the value of the underlined digit.

1. 7<u>4</u>0,225

2. <u>6</u>04,197,872

3. 1<u>2</u>,405,287

4. <u>3</u>92,183

Write the number in two other forms.

5. Standard form: 450,014

Word form:

Expanded form:

6. Standard form:

Word form: fourteen thousand, two hundred one

Expanded form:

7. Compare the values of the 9s in the number 537,499.

8. Compare the values of the 5s in the number 78,550,634.

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Compare.

9. 67,893 ◯ 67,943 | **10.** 450,823 ◯ 405,823 | **11.** 176,994 ◯ 176,994

12. Your body contains about 60,000 miles of blood vessels. Write this number in word form.

13. **Which One Doesn't Belong?** Which number does *not* belong with the other three?

$1 \times 10{,}000 + 4 \times 1{,}000 + 2 \times 100 + 6 \times 1$ fourteen thousand, two hundred six

140,206

Hundreds	Tens	Ones	Hundreds	Tens	Ones
	1	4,	2	0	6

14. DIG DEEPER! Find the difference in the values of the underlined digits.

8̲56,092 37,8̲41

Use the table.

15. **Modeling Real Life** Compare the values of the 3s in the music cost.

16. **Modeling Real Life** Compare the values of the 2s in the cast cost.

17. DIG DEEPER! What is the total cost for the director and producers? Write your answer in word form.

Movie Production Costs	
Item	**Cost**
Cast	$17,242,551
Director	$2,712,480
Editing	$3,000,000
Music	$3,375,900
Producers	$2,759,981
Visual effects	$13,932,452

Review & Refresh

Compare.

18. 0.14 ◯ 0.15 | **19.** 2.2 ◯ 2.20 | **20.** 5.8 ◯ 5.08

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Name _____

Patterns and Powers of 10

1.3

Learning Target: Write numbers using exponents.

Success Criteria:

- I can use exponents to show powers of 10.
- I can find the values of expressions with powers of 10.

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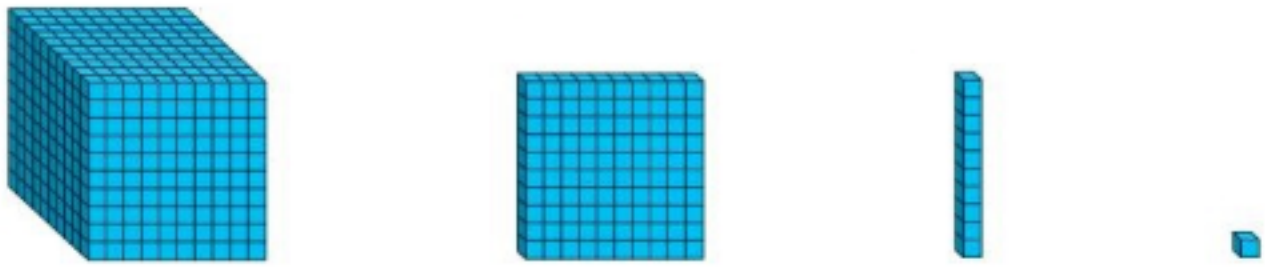
MAFS.5.NBT.1.2

Explore and Grow

Write a multiplication expression to answer each question.



How many units are in 1 rod?

How many units are in 10 rods?

How many units are in 100 rods?

How many units are in 1,000 rods?

MP **Repeated Reasoning** How many tens are in 100? in 1,000? in 10,000?

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Think and Grow: Patterns and Powers of 10

Key Idea A **power** is a product of repeated factors. The **base** of a power is the repeated factor. The **exponent** of a power gives the number of times the base is used as a factor.

base — exponent

$$\underbrace{10 \times 10 \times 10 \times 10 \times 10}_{\text{10 is used as a factor 5 times.}} = \underbrace{10^5}_{\text{power}}$$

So, the exponent is 5.

10^5 is read as "ten to the fifth."



Example Write the product $10 \times 10 \times 10$ as a power.

$$\underbrace{10 \times 10 \times 10}_{\text{10 is used as a factor 3 times. So, the exponent is 3.}} = 10^3 = 1{,}000$$

So, $10 \times 10 \times 10$ can be written as _____.

Example Find the value of 4×10^3.

Multiply 4 by powers of 10. Look for a pattern.

$4 \times 10^1 = 4 \times 10 =$ _____

$4 \times 10^2 = 4 \times 10 \times 10 =$ _____

$4 \times 10^3 = 4 \times 10 \times 10 \times 10 =$ _____

So, $4 \times 10^3 =$ _____.

Every time you multiply a number by 10, the number shifts one position to the left in a place value chart.



Notice the pattern: In each product, the number of zeros after 4 is equal to the exponent.

Show and Grow

1. Identify the base, exponent, and power for the expression 10^6.

2. Write the product $10 \times 10 \times 10 \times 10$ as a power.

3. Find the value of 5×10^2.

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Name _____

Apply and Grow: Practice

Find each product. Use patterns to help.

4. $2 \times 10 =$ _____

$2 \times 100 =$ _____

$2 \times 1{,}000 =$ _____

$2 \times 10{,}000 =$ _____

5. $9 \times 10 =$ _____

$9 \times 100 =$ _____

$9 \times 1{,}000 =$ _____

$9 \times 10{,}000 =$ _____

6. $5 \times 10 =$ _____

$5 \times 100 =$ _____

$5 \times 1{,}000 =$ _____

$5 \times 10{,}000 =$ _____

Find the value of the expression.

7. 10^4

8. 6×10^5

9. 7×10^2

10. 5×10^4

Rewrite the number as a whole number multiplied by a power of 10.

11. 20,000

12. 500

13. 900,000

MP **Number Sense** Write the number in expanded form using exponents.

14. 53,124

$(5 \times 10^4) +$ _____

15. 862

$(8 \times 10^2) +$ _____

16. DIG DEEPER! Your friend writes $(3 \times 10^4) + (5 \times 10^3) + (2 \times 10^2) + 4$ as the expanded form of thirty-five thousand, twenty-four. Explain what your friend did wrong.

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Think and Grow: Modeling Real Life

Example Newton and Descartes are running for mayor. How many people voted in the election?

Candidate	Votes
Newton	10^5
Descartes	9×10^4

Find the number of votes for each candidate.

Newton: $10^5 =$ _____

Descartes: $9 \times 10^4 =$ _____

Add the votes for Newton and Descartes.

$$\begin{array}{r} \square \\ + \square \\ \hline \square \end{array}$$

_____ people voted in the election.

Show and Grow

17. A surf shop has been in business for two years. What are the total sales for Year 1 and Year 2 combined?

Year	Sales
Year 1	$\$10^4$
Year 2	$\$6 \times 10^5$

18. Which migration is farther? About how much farther is it?



Chinook Salmon: about 4×10^3 km



Leatherback Turtle: about 2×10^4 km

19. DIG DEEPER! A human has about 10^4 taste buds. A cow has about 3 times as many taste buds as a human. About how many taste buds does a cow have? Write your answer as a whole number multiplied by a power of 10.

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Name _____

Homework & Practice 1.3

Learning Target: Write numbers using exponents.

Example Write the product $10 \times 10 \times 10 \times 10$ as a power.

$$\underbrace{10 \times 10 \times 10 \times 10}_{} = 10^4 = 10{,}000$$

10 is used as a factor 4 times. So, the exponent is 4.

So, $10 \times 10 \times 10 \times 10$ can be written as 10^4.

The exponent is equal to the number of zeros in the product!

Example Find the value of 6×10^2.

Multiply 6 by powers of 10. Look for a pattern.

$6 \times 10^1 = 6 \times 10 =$ 60

$6 \times 10^2 = 6 \times 10 \times 10 =$ 600

So, $6 \times 10^2 =$ 600.



1. Identify the base, exponent, and power for the expression 10^3.

2. Write $10 \times 10 \times 10 \times 10 \times 10$ as a power.

Find each product. Use patterns to help.

3. $6 \times 10 =$ _____

$6 \times 100 =$ _____

$6 \times 1{,}000 =$ _____

$6 \times 10{,}000 =$ _____

4. $8 \times 10 =$ _____

$8 \times 100 =$ _____

$8 \times 1{,}000 =$ _____

$8 \times 10{,}000 =$ _____

5. $4 \times 10 =$ _____

$4 \times 100 =$ _____

$4 \times 1{,}000 =$ _____

$4 \times 10{,}000 =$ _____

Find the value of the expression.

6. 10^3

7. 2×10^4

8. 9×10^5

9. 3×10^2

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Rewrite the number as a whole number multiplied by a power of 10.

10. 100,000

11. 70

12. 6,000

Number Sense Write the number in standard form.

13. $(3 \times 10^2) + (8 \times 10^1)$

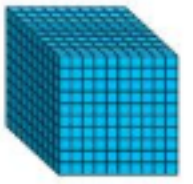
14. $(2 \times 10^3) + (5 \times 10^2) + (4 \times 10^1)$

15. YOU BE THE TEACHER Newton says $10^6 = 10 \times 6$. Is he correct? Explain.

16. Which One Doesn't Belong? Which one does *not* belong with the other three?



10^2



10×10

17. Modeling Real Life Each student at an elementary school votes once on this year's field trip. How many students voted in all?

Field-Trip Choice	Votes
Aquarium	7×10^2
Amusement park	10^3

18. Modeling Real Life On which day did more people attend the event? How many more people?

Day	Event Attendance
Friday	$10 \times 10 \times 10$
Saturday	5×10^2

Review & Refresh

Divide. Then check your answer.

19. $6\overline{)65}$ R_____

20. $4\overline{)50}$ R_____

21. $3\overline{)45}$

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Name _____

Decimals to Thousandths 1.4

Learning Target: Write thousandths as fractions and decimals.

Success Criteria:

- I can write a decimal to the thousandths place as a fraction.
- I can write a fraction involving thousandths as a decimal.

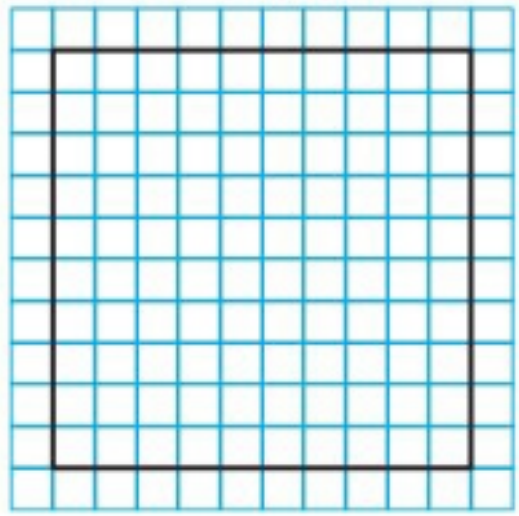
FLORIDA STANDARDS

MAFS.5.NBT.1.1
MAFS.5.NBT.1.3a

Explore and Grow

Divide the square into 10 equal parts. Shade one part. What part of the whole is shaded?

Fraction: Decimal:



Divide each of the 10 parts into 10 equal parts. Shade one part using a different color. What part of the whole is shaded with the second color?

Fraction: Decimal:

If you divide each of the 100 equal parts into 10 equal parts, how many parts will the model have?

If you shade one of those parts, what part of the whole is shaded?

Fraction: Decimal:

MP **Structure** Compare the number of hundredths to the number of tenths. Compare the number of hundredths to the number of thousandths. What do you notice?

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Think and Grow: Thousandths

Key Idea In a decimal, the third place to the right of the decimal point is the **thousandths place**. You can write **thousandths** as fractions or decimals.

Tens	Ones	.	Tenths	Hundredths	Thousandths
	0	.	0	0	1

one thousandth, $\frac{1}{1{,}000}$, 0.001

Example Write $\frac{5}{1{,}000}$ as a decimal.

$\frac{5}{1{,}000}$ and 0.005 are both read as "five thousandths."

Use a place value chart. $\frac{5}{1{,}000}$ is 5 thousandths.

Tens	Ones	.	Tenths	Hundredths	Thousandths
	_____	.	_____	_____	_____

So, $\frac{5}{1{,}000}$ = _____.



Example Write $\frac{555}{1{,}000}$ as a decimal.

The relationships between the place value positions are the same with decimals as they are with whole numbers.

Use a place value chart. $\frac{555}{1{,}000}$ is 555 thousandths.

Tens	Ones	.	Tenths	Hundredths	Thousandths
	_____	.	_____	_____	_____

So, $\frac{555}{1{,}000}$ = _____.



Show and Grow

Write the decimal as a fraction.

1. 0.009 **2.** 0.063 **3.** 0.194

Write the fraction as a decimal.

4. $\frac{3}{1{,}000}$ **5.** $\frac{91}{1{,}000}$ **6.** $\frac{607}{1{,}000}$

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Name _____

Apply and Grow: Practice

Write the decimal as a fraction.

7. 0.645

8. 0.002

9. 0.98

10. 0.6

Write the fraction as a decimal.

11. $\frac{884}{1{,}000}$

12. $\frac{8}{1{,}000}$

13. $\frac{39}{100}$

14. $\frac{1}{10}$

15. 0.4 is $\frac{1}{10}$ of what number?

16. 0.52 is 10 times as great as what number?

17. You use 47 of the cotton balls for an art project. What portion of the bag of cotton balls do you use? Write your answer as a decimal.



18. **Which One Doesn't Belong?** Which number does *not* belong with the other three?

Ones	.	Tenths	Hundredths	Thousandths
0	.	0	2	9

twenty-nine thousandths

$\frac{29}{1{,}000}$

0.29

19. **YOU BE THE TEACHER** Your friend says the value of the 7 in the hundredths place of 0.877 is 10 times as great as the 7 in the thousandths place. Is your friend correct? Explain.

20. **DIG DEEPER!** Write each fraction as a decimal. What do you notice?

$\frac{4}{10}$, $\frac{40}{100}$, and $\frac{400}{1{,}000}$

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Think and Grow: Modeling Real Life



Example You put together 156 pieces of the puzzle before lunch and 148 pieces of the puzzle after lunch. What portion of the puzzle did you put together? Write your answer as a decimal.

Add the pieces you put together before lunch and after lunch.

$$\begin{array}{r} 11 \\ 156 \\ +\ 148 \\ \hline 304 \end{array}$$

Find the fraction of the puzzle you put together.

$\frac{\square}{\square}$ ← number of pieces you put together

$\frac{\square}{\square}$ ← total number of pieces in the puzzle

Write the fraction as a decimal.

You put together _____ of the puzzle.

Show and Grow



21. You make flash cards out of index cards. You use 50 index cards for social studies and 25 index cards for science. What portion of the pack of index cards do you use? Write your answer as a decimal.



22. There are 458 knock-knock jokes in the book. What fraction of the jokes in the book are *not* knock-knock jokes?

23. DIG DEEPER! A newly hatched caterpillar was 0.02 inches long. After 2 weeks, the caterpillar grew 10 times as long as its length when it hatched. After another 2 weeks, the caterpillar grew 10 times as long as its length after 2 weeks. How long is the caterpillar now?

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Name _____

Homework & Practice 1.4

Learning Target: Write thousandths as fractions and decimals.

Example Write $\frac{67}{1,000}$ as a decimal.

Use a place value chart. $\frac{67}{1,000}$ is 67 thousandths.

Tens	Ones	.	Tenths	Hundredths	Thousandths
	0	.	0	6	7

So, $\frac{67}{1,000} = 0.067$.

Write the decimal as a fraction.

1. 0.735

2. 0.051

3. 0.804

4. 0.2

Write the fraction as a decimal.

5. $\frac{98}{1,000}$

6. $\frac{67}{100}$

7. $\frac{4}{100}$

8. $\frac{9}{10}$

9. 0.08 is 10 times as great as what number?

10. 0.001 is $\frac{1}{10}$ of what number?

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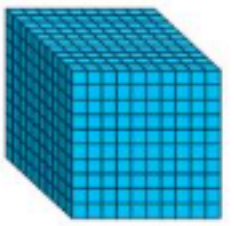
11. **YOU BE THE TEACHER** Your friend says that $\frac{16}{1{,}000}$ can be written as 0.16. Is your friend correct? Explain.

12. **Precision** Thirteen unit cubes are taken from the thousand cube. Write a fraction and a decimal to represent how many unit cubes are left.



13. **DIG DEEPER!** Write the number represented by each point on the number line.



Point *X*: _____ Point *Y*: _____

14. **Modeling Real Life** A restaurant owner has a 1,000-count box of napkins. She puts 125 of the napkins on tables. What portion of the box of napkins does she use for the tables? Write your answer as a decimal.

15. **DIG DEEPER!** Your friend has a recipe book with 1,000 recipes. She wants to try two new recipes each week. What fraction of the recipes in the book will she have tried after 1 year?

Review & Refresh

16. Extend the pattern of shapes by repeating the rule "square, octagon, pentagon, octagon." What is the 48th shape in the pattern?



_____ _____ _____ _____ _____ _____ ...

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Name _____

Place Value with Decimals 1.5

Learning Target: Write decimals in different forms and compare the values of digits.

Success Criteria:

- I can identify the value of a digit in a decimal.
- I can write decimals in different forms.
- I can compare the values of two identical digits in a decimal.

FLORIDA STANDARDS

MAFS.5.NBT.1.1
MAFS.5.NBT.1.3a

Explore and Grow

Model the number. Draw your model.
Then write the value of each digit.



3.33







Ones	.	Tenths	Hundredths
_____	.	_____	_____

Repeated Reasoning Compare the value of the ones digit to the value of the tenths digit. Then do the same with the tenths and the hundredths digits. Explain why you can use base ten blocks to model ones, tenths, and hundredths.

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Think and Grow: Place Value with Decimals

Key Idea In a place value chart, whole numbers are to the left of the decimal point. Decimals are to the right of the decimal point.

Ones Period				Decimals		
Hundreds	Tens	Ones	.	Tenths	Hundredths	Thousandths
		5	.	4	6	9

		5 ones		4 tenths	6 hundredths	9 thousandths
		5		0.4	0.06	0.009

Use the place value of the last digit in a decimal to help you read it.



The number 5.469 is read as "five and four hundred sixty-nine thousandths."

Example Write the number in standard form, word form, and expanded form.

Ones Period				Decimals		
Hundreds	Tens	Ones	.	Tenths	Hundredths	Thousandths
		2	.	5	5	7

Standard form:

Word form:

Expanded form: $2 \times 1 + \_\_\_\_ \times \_\_\_\_ + 5 \times \frac{1}{100} + \_\_\_\_ \times \_\_\_\_$

Show and Grow

Write the number in two other forms.

1. Standard form: 0.398

Word form:

Expanded form:

2. Standard form:

Word form: eight and forty-six thousandths

Expanded form:

3. Compare the values of the 5s in the number 2.557.

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Name _____

Apply and Grow: Practice

Write the value of the underlined digit.

4. 0.$\underline{4}$18

5. 5.2$\underline{9}$6

6. $\underline{3}$.806

7. 0.54$\underline{7}$

Write the number in two other forms.

8. Standard form:

Word form:

Expanded form: $4 \times 1 + 9 \times \frac{1}{10} + 8 \times \frac{1}{1{,}000}$

9. Standard form: 0.125

Word form:

Expanded form:

10. Compare the values of the 4s in the number 0.844.

11. Compare the values of the 3s in the number 3.367.

12. A pygmy jerboa weighs one hundred thirty-two thousandths pound. Write this number in standard form.



13. MP **Reasoning** Is 9.540 equivalent to 9.54? Explain.

14. DIG DEEPER! Write three decimals that are equivalent to $6 \times 1 + 4 \times \frac{1}{10}$.

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Think and Grow: Modeling Real Life

Heaviest Fruit Records	
Fruit	**Mass (kg)**
Tomato	3.906
Chili pepper	0.348

Example How do the values of the 3s in the masses of the fruits compare?

Use a place value chart to help you find the value of each 3.

Ones Period				Decimals		
Hundreds	**Tens**	**Ones**	**.**	**Tenths**	**Hundredths**	**Thousandths**
		3	.	9	0	6
		0	.	3	4	8
		3	.	0.9	0.00	0.006
		0	.	0.3	0.04	0.008

The value of the 3 in the mass of the tomato is _____.

The value of the 3 in the mass of the chili pepper is _____.

So, the value of the 3 in the mass of the tomato is _____ times the value of the 3 in the mass of the chili pepper. Also, the value of the 3 in the mass of the chili pepper is _____ the value of the 3 in the mass of the tomato.

Show and Grow

15. Two baseball players have batting averages of 0.358 and 0.345. How do the values of the 5s in the batting averages compare?

16. The stopwatch shows a runner's 100-meter dash time. Write the time in words.



17. **DIG DEEPER!** You exchange 1 U.S. dollar for Australian dollars and 1 U.S. dollar for Kuwaiti dinars. Do you have 10 times as many Australian dollars as Kuwaiti dinars? Explain.

Recent Foreign Exchange Rates	
1 U.S. dollar	1.302 Australian dollars
1 U.S. dollar	0.302 Kuwaiti dinars

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Name _____

Homework & Practice 1.5

Learning Target: Write decimals in different forms and compare the values of digits.

Example Write the number in standard form, word form, and expanded form.

Ones Period				Decimals		
Hundreds	Tens	Ones	.	Tenths	Hundredths	Thousandths
		6	.	9	2	8

Standard form: 6.928

Word form: six and nine hundred twenty-eight thousandths

Expanded form: $6 \times 1 + 9 \times \frac{1}{10} + 2 \times \frac{1}{100} + 8 \times \frac{1}{1{,}000}$

Write the value of the underlined digit.

1. 5.437

2. 0.852

3. 0.962

4. 4.165

Write the number in two other forms.

5. Standard form: 9.267

Word form:

Expanded form:

6. Standard form:

Word form: two and forty-three thousandths

Expanded form:

7. Compare the values of the 6s in the number 1.668.

8. Compare the values of the 7s in the number 7.704.

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9. A pygmy possum weighs 0.097 pound. Write this number in word form.

---

10. Which One Doesn't Belong? Which one does *not* belong with the other three?

$5 \times \frac{1}{10} + 1 \times \frac{1}{100} + 4 \times \frac{1}{1{,}000}$

0.514

five and fourteen tenths

Ones	.	Tenths	Hundredths	Thousandths
0	.	5	1	4

---

11. Reasoning Which number cards are equal to the value of the underlined digit?

$0.73\underline{2}$

$2 \times \frac{1}{1{,}000}$	$2 \times \frac{1}{100}$	2 thousand	2.000
2	two thousandths	0.002	2,000

---

12. Modeling Real Life How do the values of the 5s in the heights of the plants compare?

Classroom Plant Heights	
Plant	**Height (in.)**
Peace lily	1.125
Venus flytrap	1.250

13. Modeling Real Life The world's largest gold nugget is located in Las Vegas, Nevada. It has a mass of about 27.247 kilograms. Write how to say the nugget's mass in words.



Review & Refresh

Compare.

14. $\frac{8}{10} \bigcirc \frac{80}{100}$

15. $\frac{5}{8} \bigcirc \frac{3}{6}$

16. $\frac{7}{2} \bigcirc \frac{10}{8}$

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Name _____

Compare Decimals 1.6

Learning Target: Compare decimals to the thousandths place.

Success Criteria:

- I can choose a strategy to compare two decimals.
- I can use the symbols <, >, and = to compare two decimals.
- I can compare and order decimals.

FLORIDA STANDARDS
MAFS.5.NBT.1.3b

Explore and Grow

Use models to compare the decimals.

0.62 ◯ 0.26

0.80 ◯ 0.8

3.5 ◯ 3.55

MP **Reasoning** How can you use a place value chart to compare two decimals? Use a place value chart to check your answers above.

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Think and Grow: Compare Decimals

Example Compare 3.769 and 3.749.

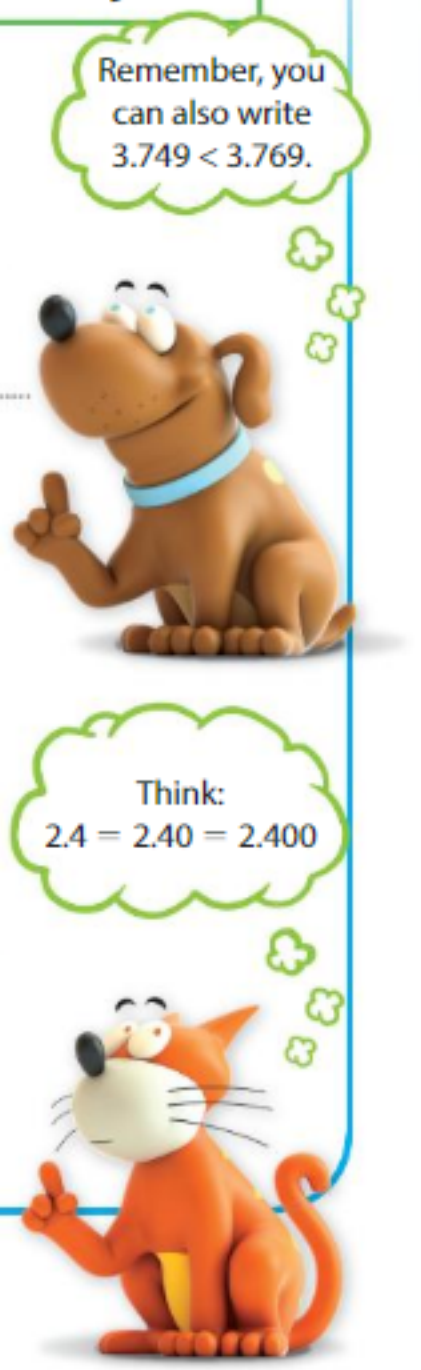
Use a place value chart. Start at the left. Compare the digits in each place until the digits differ.

Ones	.	Tenths	Hundredths	Thousandths
3	.	7	6	9
3	.	7	4	9

The digits in the ones place and the tenths place are the same. Compare the hundredths.

6 hundredths ◯ 4 hundredths

So, 3.769 ◯ 3.749.



Example Compare 2.4 and 2.405.

Use place value. Line up the decimal points. Start at the left. Compare the digits in each place until the digits differ.

2.400 ← Place zeros to help you compare.

2.405

The digits in the ones place, the tenths place, and the hundredths place are the same. Compare the thousandths.

0 thousandths ◯ 5 thousandths

So, 2.4 ◯ 2.405.

Show and Grow

Compare.

1. 9.063 ◯ 9.067

Ones	.	Tenths	Hundredths	Thousandths
	.			
	.			

2. 0.89 ◯ 0.809

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Name _____

Apply and Grow: Practice

Compare.

3. 8.537 ◯ 8.541

4. 6.401 ◯ 6.409

5. 7.409 ◯ 7.049

6. 0.25 ◯ 0.250

7. 2.701 ◯ 2.7

8. 4.006 ◯ 4.61

9. 0.041 ◯ forty-one and six tenths

10. seven thousandths ◯ 0.7

Order the decimals from least to greatest.

11. 321.499, 325.499, 321.489

12. 9.7, 9.64, 9.78

Open-Ended Complete the number to make the statement true.

13. 10.3☐1 > 10.311

14. 28.60 = 28.60☐

15. MP **Number Sense** Is 0.472 greater than or less than $\frac{47}{1{,}000}$? Explain.

16. YOU BE THE TEACHER Your friend says that 45.6 is less than 45.57 because 6 is less than 57. Is your friend correct? Explain.

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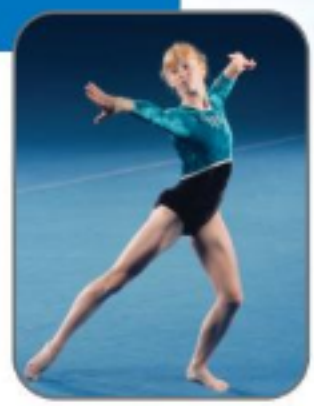
Think and Grow: Modeling Real Life



Example You, your friend, and your cousin compete at a gymnastics competition. Your floor routine score is 15.633. Your friend's score is 15.533, and your cousin's score is 15.635. Order the scores from least to greatest.

Use a place value chart. Compare the digits in each place until the digits differ.

Tens	Ones	.	Tenths	Hundredths	Thousandths
1	5	.	6	3	3
1	5	.	5	3	3
1	5	.	6	3	5

_____ is the least.

Write the remaining numbers in the place value chart. Compare the digits in each place until the digits differ.

Tens	Ones	.	Tenths	Hundredths	Thousandths
_____	_____	.	_____	_____	_____
_____	_____	.	_____	_____	_____

So, the scores from least to greatest are _____, _____, and _____.

Show and Grow

17. You stand on one leg for 2.75 minutes, your friend stands on one leg for 2 minutes, and your cousin stands on one leg for 2.25 minutes. Order the amounts of time from least to greatest.

18. **DIG DEEPER!** You, Newton, Descartes, and your friend each have a tablet. The table shows the screen display sizes. Your friend's tablet has the greatest display size. Your tablet's display size is greater than Newton's but less than Descartes's. What is the display size of your tablet?

Tablet	Screen Display (inches)
A	12.9
B	10.5
C	9.7
D	7.9

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Name _____

Homework & Practice 1.6

Learning Target: Compare decimals to the thousandths place.

Example Compare 5.167 and 5.16.

Use place value. Line up the decimal points. Start at the left. Compare the digits in each place until the digits differ.

5.167

5.160 ← Place a zero to help you compare.

The digits in the ones place, the tenths place, and the hundredths place are the same. Compare the thousandths.

7 thousandths (>) 0 thousandths

So, 5.167 (>) 5.16.

Write which place to use when comparing the numbers.

1. 0.521
0.576

2. 17.422
17.946

3. 9.678
9.67

Compare.

4. 3.445 ◯ 3.472

Ones	.	Tenths	Hundredths	Thousandths
	.			
	.			

5. 23.049 ◯ 23.409

6. 75.4 ◯ 75.391

7. 14.10 ◯ 14.100

8. 4.05 ◯ 4.005

9. 15.2 ◯ fifteen and two thousandths

10. 0.021 ◯ twenty-six thousandths

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Order the decimals from least to greatest.

11. 2.75, 0.2, 0.275

12. 56.01, 56.1, 56.001

Open-Ended Complete the number to make the statement true.

13. $29.030 = 29.03\square$

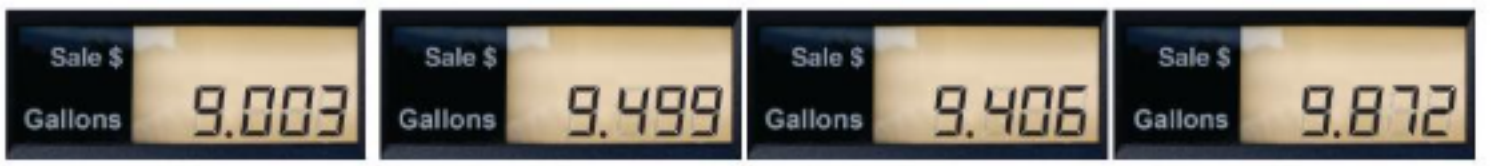
14. $3.562 < 3.5\square 2$

15. **YOU BE THE TEACHER** Newton says 8.51 is less than 8.492 because 8.51 has fewer digits after the decimal point than 8.492. Is he correct? Explain.

16. **Open-Ended** Descartes is thinking of a number less than 46.922 and greater than 46.915. What could Descartes's number be?

17. **Modeling Real Life** Player A's batting average is 0.300, Player B's batting average is 0.333, and Player C's batting average is 0.313. Order the batting averages from greatest to least.

18. **Modeling Real Life** A gasoline station customer pumps more than 9.487 gallons of gasoline but less than 10 gallons. Which display could be his?



Review & Refresh

Round the number to the place of the underlined digit.

19. 7,8$\underline{5}$1

20. $\underline{9}$,462

21. 4,$\underline{9}$83

22. 5$\underline{1}$,504

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Name _____

Round Decimals 1.7

Learning Target: Use place value to round decimals.

Success Criteria:

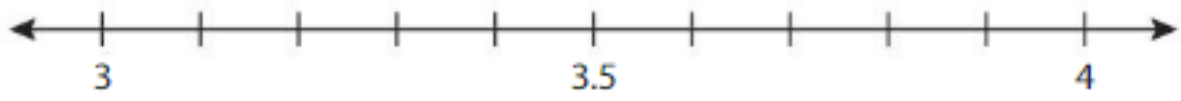
- I can explain which digit I use to round and why.
- I can round a decimal to any place.

FLORIDA STANDARDS
MAFS.5.NBT.1.4

Explore and Grow

Plot the numbers on the number line. Which numbers round to 3? Which numbers round to 4? How do you know?

3.51 3.6 3.09 3.77 3.9



MP **Repeated Reasoning** Show how you can use a number line to round 3.09, 3.51, and 3.77 to the nearest tenth.

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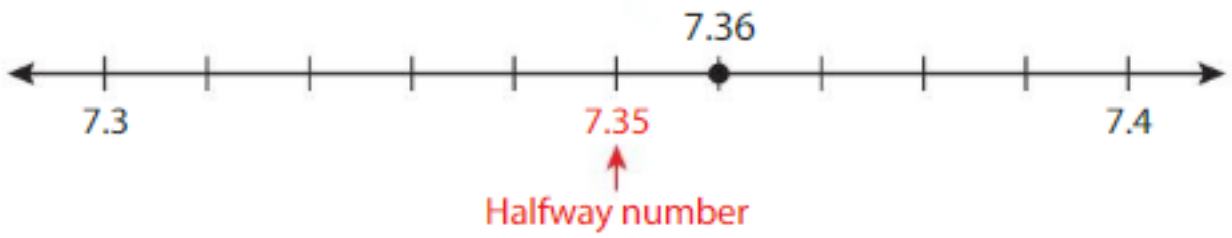
Think and Grow: Round Decimal Numbers

Example Use a number line to round 7.36 to the nearest tenth.



7.36 is closer to 7.4 than it is to 7.3.

So, 7.36 rounded to the nearest tenth is _____.

Example Use place value to round 2.185 to the nearest whole number and to the nearest hundredth.

If the digit to the right of the rounding digit is 5 or greater, then the rounding digit increases by one.



Nearest whole number:

ones place

1 < 5

2.1 8 5

2

Nearest hundredth:

hundredths place

5 = 5

2.1 8 5

2.1 9

So, 2.185 rounded to the nearest whole number is _____.

2.185 rounded to the nearest hundredth is _____.

Show and Grow

Round the number to the place of the underlined digit.

1. 12.6̲7

2. 0.4̲39

3. 2̲.555

4. 5.4̲09

5. Round 0.68 to the nearest tenth.

6. Round 1.715 to the nearest hundredth.

7. Round 4.07 to the nearest whole number.

8. Round 0.289 to the nearest tenth.

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Name _____

Apply and Grow: Practice

Round the number to the place of the underlined digit.

9. 1.4$\underline{8}$2

10. 5.$\underline{0}$93

11. $\underline{8}$.502

12. $\underline{3}$4.748

13. Round 2.619 to the nearest whole number.

14. Round 7.825 to the nearest tenth.

15. Round 92.701 to the nearest ten.

16. Round 4.263 to the nearest hundredth.

17. Round 0.829.

Nearest whole number: _____

Nearest tenth: _____

Nearest hundredth: _____

18. Round 18.062.

Nearest whole number: _____

Nearest tenth: _____

Nearest hundredth: _____

19. A baby harp seal weighs 25.482 pounds. Round this weight to the nearest tenth of a pound.



Name the place value to which the number was rounded.

20. 8.942 to 8.94

21. 0.164 to 0.2

22. 15.826 to 16

23. **Writing** Explain what happens when you round 2.999 to the nearest tenth.

24. **DIG DEEPER!** To what place should you round 23.459 to get the greatest number? the least number? Explain.

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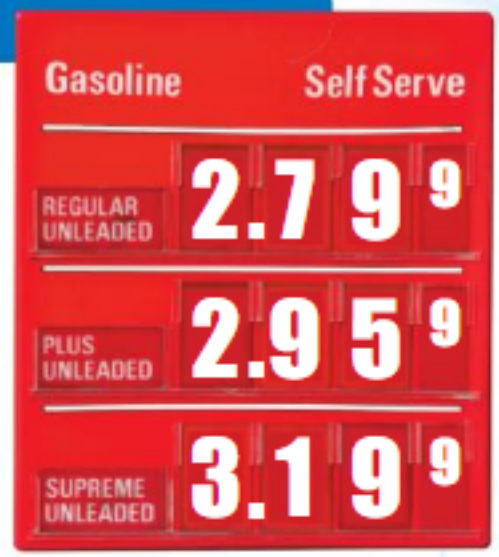
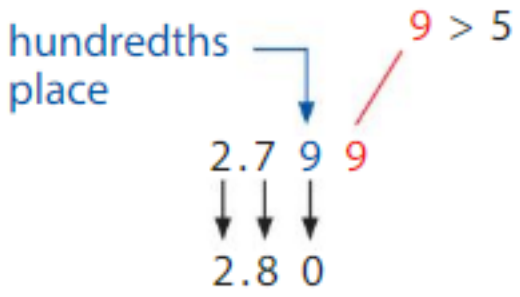
Think and Grow: Modeling Real Life



Example Gasoline prices are listed to the nearest thousandth of a dollar. The final price is rounded to the nearest hundredth. About how much does a customer pay for 1 gallon of regular gasoline at the station shown?

Think: What do you know? What do you need to find? How will you solve?

Use place value to round the price of 1 gallon of regular gasoline, \$2.799, to the nearest hundredth.

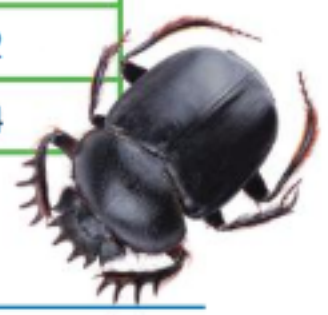


So, a customer will pay about \$_____ for 1 gallon of gasoline.

Show and Grow

Use the table.

Insect	Length (inches)
Cicada	1.48
Dung beetle	0.73
Hissing cockroach	2.682
Praying mantis	3.254



25. What is the length of the praying mantis rounded to the nearest hundredth?

26. What is the length of the cicada rounded to the nearest tenth?

27. What is the length of the hissing cockroach rounded to the nearest tenth?

28. DIG DEEPER! You have about \$3 in coins. Write one possible combination of coins that represents the least amount of money you could have. Write another combination of coins for the greatest amount of money you could have.

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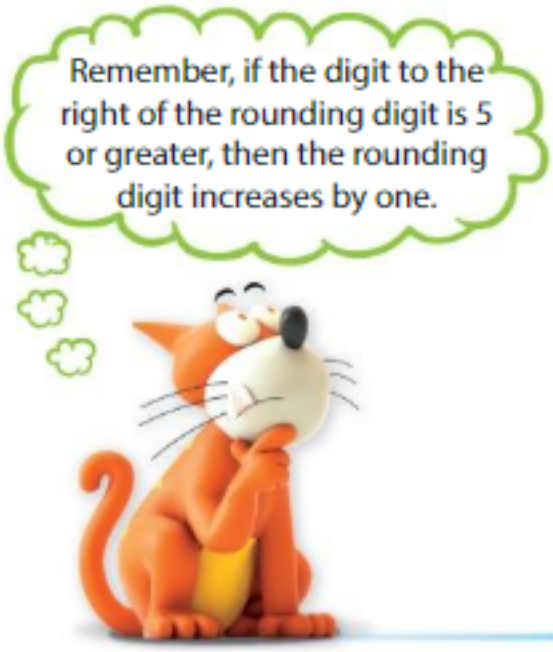
Name _____

Homework & Practice 1.7

Learning Target: Use place value to round decimals.

Example Use place value to round 3.245 to the nearest tenth and to the nearest hundredth.



tenths place

$4 < 5$

3.2 4 5

3.2

hundredths place

$5 = 5$

3.2 4 5

3.2 5

So, 3.245 rounded to the nearest tenth is 3.2 .

3.245 rounded to the nearest hundredth is 3.25 .

Round the number to the place of the underlined digit.

1. 4̲9.012

2. 2̲.308

3. 9.6̲47

4. 7.51̲9

5. Round 8.436 to the nearest hundredth.

6. Round 15.159 to the nearest ten.

7. Round 1.602 to the nearest whole number.

8. Round 3.619 to the nearest tenth.

9. Round 4.183.

Nearest whole number: _____

Nearest tenth: _____

Nearest hundredth: _____

10. Round 9.076.

Nearest whole number: _____

Nearest tenth: _____

Nearest hundredth: _____

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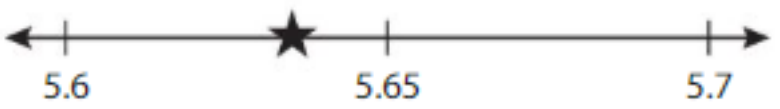
Name the place value to which each number was rounded.

11. 16.932 to 20

12. 0.581 to 0.58

13. 7.429 to 7.4

14. **Structure** Round ★ to the nearest tenth.



15. **Precision** The area of a campground is exactly halfway between 25.9 acres and 26 acres. What is the area of the campground?

16. **Open-Ended** Name two different numbers that round to 3.8 when rounded to the nearest tenth.

17. **Open-Ended** Name two different numbers that round to 7.42 when rounded to the nearest hundredth.

Use the table.

18. **Modeling Real Life** Your science class designs and tests four model boats to find out how much weight they can hold without sinking. What is the greatest weight rounded to the nearest tenth that a boat can hold?

Weights Held without Sinking (kilograms)
0.694
0.605
0.592
0.547

19. **Modeling Real Life** What is the least weight rounded to the nearest hundredth that a boat can hold?

Review & Refresh

Find the product.

20. 7×40

21. $5{,}000 \times 9$

22. 8×200

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Name _____

Performance Task 1

There are 18 species of penguins. Scientists have estimated the populations of 16 penguin species.

1. What fraction of penguin species have unknown populations?

---

2. Several species of penguins and their estimated populations and locations are shown.

Emperor
Five hundred ninety-five thousand



Antarctica

Adélie
$4 \times 1{,}000{,}000 + 7 \times 100{,}000 + 4 \times 10{,}000$



Antarctica

Macaroni
18×10^6



Subantarctic waters to Antarctic Peninsula

Rockhopper
2,460,000



Subantarctic waters to South America

a. Are there more emperor penguins or rockhopper penguins? Explain.

b. Which species of penguin has the greatest population? Explain.

c. About how many penguins live in Antarctica? Round your answer to the nearest hundred thousand.

d. The Galápagos penguin is an endangered species. There are about 1,000 times as many macaroni penguins as Galápagos penguins. About how many Galápagos penguins are there?

Galápagos



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Place Value Plug In

Directions:

1. Players take turns.
2. On your turn, roll six dice. Arrange the dice into a six-digit number that matches one of the descriptions.
3. Write your number on the lines.
4. The first player to fill in all of the numbers wins!

A number with ...	Number
• 5 in the tens place • 3 in the thousandths place	___ ___ ___ . ___ ___ ___
• 4 in the ones place • 5 in the hundredths place	___ ___ ___ . ___ ___ ___
• 2 in the hundredths place • 2 in the hundreds place	___ ___ ___ . ___ ___ ___
• 1 in the ones place • 6 in the tenths place	___ ___ ___ . ___ ___ ___
• 4 in the thousandths place • 6 in the tens place	___ ___ ___ . ___ ___ ___
• three of the same digit	___ ___ ___ . ___ ___ ___
• digits in the hundreds place and tenths place have a sum of 8	___ ___ ___ . ___ ___ ___
• digits in the tens place and thousandths place have a sum of 7	___ ___ ___ . ___ ___ ___
Freebie! Use any number!	___ ___ ___ . ___ ___ ___



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Name _____

Chapter Practice 1

1.1 Place Value Patterns

Use a place value chart to answer the question.

1. What number is 10 times as great as 4,000?

2. What number is $\frac{1}{10}$ of 8,000?

3. 10,000 is 10 times as great as what number?

4. 70 is $\frac{1}{10}$ of what number?

5. Complete the table.

Number	10 times as great as the number	$\frac{1}{10}$ of the number
30		
600		
9,000		
20,000		

6. **YOU BE THE TEACHER** Your friend says 500 is 10 times as great as 5,000. Is your friend correct? Explain.

1.2 Place Value with Whole Numbers

7. Write the number in two other forms.

Standard form: 456,701

Word form:

Expanded form:

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8. Write the number in two other forms.

Standard form:

Word form: Eight million, sixty thousand, five hundred seventy-three

Expanded form:

9. Compare the values of the 4s in the number 900,441,358.

10. Write the values of the 6s in the number 96,672.

Compare.

11. 83,802 ◯ 83,082

12. 2,498,576 ◯ 2,477,583

1.3 Patterns and Powers of 10

13. Write 10×10 as a power.

Find each product. Use patterns to help.

14. $4 \times 10 =$ _____

$4 \times 100 =$ _____

$4 \times 1{,}000 =$ _____

$4 \times 10{,}000 =$ _____

15. $3 \times 10 =$ _____

$3 \times 100 =$ _____

$3 \times 1{,}000 =$ _____

$3 \times 10{,}000 =$ _____

16. $7 \times 10 =$ _____

$7 \times 100 =$ _____

$7 \times 1{,}000 =$ _____

$7 \times 10{,}000 =$ _____

Find the value of the expression.

17. 10^5

18. 8×10^1

19. 7×10^4

20. 3×10^5

Rewrite the number as a whole number multiplied by a power of 10.

21. 5,000

22. 600,000

23. 90

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1.4 Decimals to Thousandths

Write the decimal as a fraction.

24. 0.062

25. 0.008

26. 0.195

Write the fraction as a decimal.

27. $\frac{2}{1{,}000}$

28. $\frac{37}{1{,}000}$

29. $\frac{409}{1{,}000}$

30. 0.7 is 10 times as great as what number?

31. 0.04 is $\frac{1}{10}$ of what number?

1.5 Place Value with Decimals

Write the number in two other forms.

32. Standard form:

Word form:

Expanded form: $5 \times 1 + 3 \times \frac{1}{10} + 8 \times \frac{1}{100} + 4 \times \frac{1}{1{,}000}$

33. Standard form: 2.059

Word form:

Expanded form:

34. Compare the values of the 5s in the number 1.055.

35. Compare the values of the 8s in the number 6.884.

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1.6 Compare Decimals

Compare.

36. 15.891 ◯ 15.791

37. 8.205 ◯ 8.25

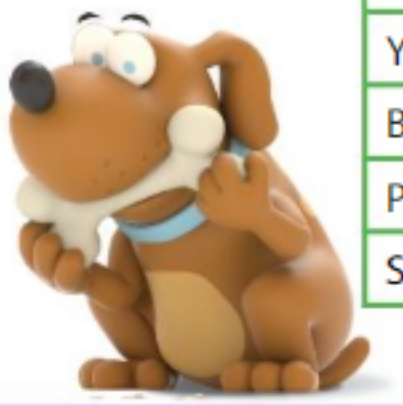
38. 3.600 ◯ 3.6

Order the decimals from least to greatest.

39. 7.008, 7.09, 7.180

40. 50.426, 50.42, 50

41. **Modeling Real Life** Newton weighs a treat at the pet store. He says it weighs less than 0.519 ounce but more than 0.453 ounce. Which treats could he have weighed?



Treat	Weight (ounce)
Yogurt pretzel	0.408
Blueberry waffle	0.512
Peanut butter	0.459
Sandwich cookie	0.591

1.7 Round Decimals

Round the number to the place of the underlined digit.

42. 9.514

43. 1.027

44. 8.469

45. 32.501

46. Round 0.176 to the nearest hundredth.

47. Round 6.538 to the nearest tenth.

48. Round 7.425.

Nearest whole number: _____

Nearest tenth: _____

Nearest hundredth: _____

49. Round 2.108.

Nearest whole number: _____

Nearest tenth: _____

Nearest hundredth: _____

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2 Numerical Expressions

- What is an atom?
- Each student in your class is making a model of a molecule using foam balls to represent the atoms. How can your teacher write an expression to find the number of foam balls needed for your class?

Chapter Learning Target:
Understand numerical expressions.

Chapter Success Criteria:
- I can identify number properties.
- I can explain number properties to write equations.
- I can interpret an expression.
- I can evaluate a numerical expression.



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Name _____

2 Vocabulary

Review Words

dividend
divisor
quotient

Organize It

Use the review words to complete the graphic organizer.

Define It

Use your vocabulary cards to complete each definition.

1. numerical expression: An _____ that contains numbers and _____

2. evaluate: To find the _____ of a _____ expression

3. order of operations: A set of _____ for evaluating _____

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Chapter 2 Vocabulary Cards

evaluate

numerical expression

order of operations

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An expression that contains numbers and operations

$31 + 56$

$19 - 18 \div 6$

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To find the value of a numerical expression

$$\underbrace{15 + 6 \times 5}_{\text{numerical expression}} = \underbrace{45}_{\text{value}}$$

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A set of rules for evaluating expressions

Order of Operations (with Grouping Symbols)

1. Perform operations in grouping symbols.
2. Multiply and divide from left to right.
3. Add and subtract from left to right.

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Number Properties 2.1

Learning Target: Use number properties.

Success Criteria:

- I can identify number properties in equations.
- I can use number properties to write equivalent expressions.

FLORIDA STANDARDS
MAFS.5.OA.1.1

Explore and Grow

Use all four numbers on the game card below to write an expression that has a value of 24. You can use any number of the four operations: addition, subtraction, multiplication, and division.



MP **Reasoning** Write another expression that has a value of 24 using the game card above.

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Think and Grow: Use Number Properties

Key Idea Here are several number properties.

Commutative Properties: Changing the order of addends or factors does not change the sum or product.	$3 + 5 = 5 + 3$ $3 \times 5 = 5 \times 3$
Associative Properties: Changing the grouping of addends or factors does not change the sum or product.	$(2 + 4) + 1 = 2 + (4 + 1)$ $(2 \times 4) \times 1 = 2 \times (4 \times 1)$
Addition Property of Zero: The sum of any number and 0 is that number.	$8 + 0 = 8$
Multiplication Properties of Zero and One: The product of any number and 0 is 0. The product of any number and 1 is that number.	$5 \times 0 = 0$ $7 \times 1 = 7$
Distributive Property: Multiplying a sum (or difference) by a number is the same as multiplying each number in the sum (or difference) by the number and adding (or subtracting) the products.	$4 \times (3 + 1) = (4 \times 3) + (4 \times 1)$ $4 \times (3 - 1) = (4 \times 3) - (4 \times 1)$

Example Complete the equation. Identify the property shown.

$32 + 29 + 8 = 29 + \_\_\_\_\_ + 8$ _____ Property of Addition

Example Use the Distributive Property to find 6×38.

You can also write 38 as a difference.
$6 \times 38 = 6 \times (40 - 2)$

$6 \times 38 = 6 \times (\_\_\_\_\_ + \_\_\_\_\_)$ Write 38 as a sum.

$= (6 \times \_\_\_\_\_) + (6 \times \_\_\_\_\_)$ Distributive Property

$= \_\_\_\_\_ + \_\_\_\_\_$ Multiply.

$= \_\_\_\_\_$ Add.



Show and Grow

1. Complete the equation. Identify the property shown.

$9 \times 15 = 15 \times \_\_\_\_\_$

2. Use the Distributive Property to find 8×49.

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Name _____

Apply and Grow: Practice

Complete the equation. Identify the property shown.

3. $1 \times$ _____ $= 17$

4. $248 + 0 =$ _____

5. $23 + 145 + 7 = 23 + 7 +$ _____

6. $3 \times (10 + 2) = (3 \times 10) + (3 \times$ _____$)$

Use the Distributive Property to find the product.

7. 5×97

8. 83×7

Use a property to find the sum or product. Identify the property you used.

9. $4 + (6 + 27)$

10. $5 \times 49 \times 0$

11. $11 + 16 + 89$

12. **YOU BE THE TEACHER** Your friend uses the Distributive Property to find 4×46. Is your friend correct? Explain.

$$\begin{aligned} 4 \times 46 &= 4 \times (50 - 4) \\ &= (4 \times 50) - (4 \times 4) \\ &= 200 - 16 \\ &= 184 \end{aligned}$$

13. **DIG DEEPER!** Can you use the Associative Property with subtraction? Explain. Use an example to justify your answer.

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Think and Grow: Modeling Real Life

Example There are three types of animals at a shelter. How many animals are there in all?

Animals at a Shelter	
Dogs	🐾 🐾 🐾 🐾
Cats	🐾 🐾 🐾 🐾 🐾 🐾
Rabbits	🐾

Each 🐾 = 4 pets.

Find the number of each type of animal at the shelter.

Dogs: 4 🐾 = 4 × 4 = _____

Cats: 5 🐾 = 5 × 4 = _____ 1 🐾 = _____ So, _____ + _____ = _____.

Rabbits: 1 🐾 = _____

Add the numbers of dogs, cats, and rabbits.

16 + 22 + 4 = _____ + _____ + _____ Commutative Property of Addition

= _____ + _____ Add.

= _____ Add.

There are _____ animals in all.

Show and Grow

14. You play three different video games in an evening. How many minutes do you play video games in all?

Minutes Playing a Video Game	
Dancing	🕐 🕐 🕐 🕐
Puzzle	🕐 🕐
Racing	🕐 🕐 🕐 🕐 🕐 🕐

Each 🕐 = 6 minutes.

15. **DIG DEEPER!** Tickets for a school play are sold out. The auditorium has 4 sections. Each section has 25 rows with 15 seats in each row. Each ticket costs $2. How much money is raised in ticket sales?

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Name _____

Homework & Practice 2.1

Learning Target: Use number properties.

Example Complete the equation. Identify the property shown.

$(6 \times 25) \times 4 = 6 \times (25 \times \underline{4})$ — Associative Property of Multiplication

Example Use the Distributive Property to find 9×45.

$9 \times 45 = 9 \times (\underline{40} + \underline{5})$ — Write 45 as a sum.

$= (9 \times \underline{40}) + (9 \times \underline{5})$ — Distributive Property

$= \underline{360} + \underline{45}$ — Multiply.

$= \underline{405}$ — Add.

Complete the equation. Identify the property shown.

1. $687 \times \_\_\_\_ = 0$

2. $15 + 13 = 13 + \_\_\_\_$

3. $4 \times 7 \times 25 = 4 \times \_\_\_\_ \times 7$

4. $6 \times (20 - 3) = (6 \times 20) - (6 \times \_\_\_\_)$

Use the Distributive Property to find the product.

5. 4×78

6. 23×8

Use a property to find the sum or product. Identify the property you used.

7. 6×43

8. $339 + 0 + 54$

9. $25 \times 8 \times 2$

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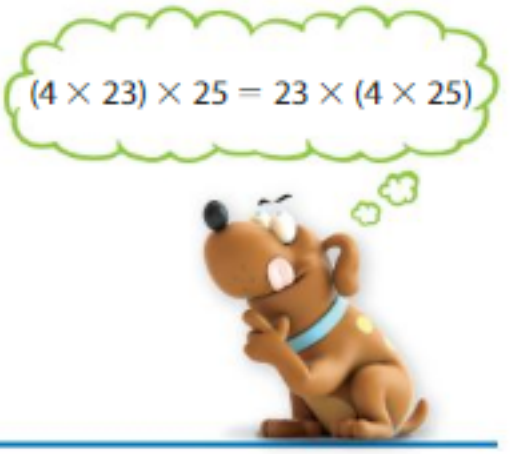
10. **Number Sense** To find $29 + (11 + 16)$, your friend adds 29 and 11. Then he adds 16 to the sum. Which property did he use and why?

11. **Writing** Explain how using properties can help you mentally find answers to problems.

12. **Number Sense** Newton uses two properties to rewrite the expression $(4 \times 23) \times 25$. Identify the properties he uses. Why would Newton use these properties?



13. **Modeling Real Life** Before performing an experiment, students are asked to predict which substance will melt an ice cube the fastest. How many students make a prediction? Identify the property you used.

Ice Cube Experiment Predictions	
Salt	☺ ☺
Sugar	☺ ☺ ☺ ◔
Water	☺ ☺ ☺ ☺

Each ☺ = 8 students.

14. **Modeling Real Life** An apartment building has 35 floors with 12 apartments on each floor. There are 300 apartments that have 2 bedrooms. The rest of the apartments have 1 bedroom. How many 1-bedroom apartments are in the building? How can you use the Distributive Property to help solve this problem mentally?

Review & Refresh

Find the sum. Check whether your answer is reasonable.

15.
$$\begin{array}{r} 8{,}968 \\ +\ 4{,}683 \\ \hline \end{array}$$

16.
$$\begin{array}{r} 75{,}310 \\ +\ 8{,}596 \\ \hline \end{array}$$

17.
$$\begin{array}{r} 90{,}583 \\ +\ 19{,}877 \\ \hline \end{array}$$

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Order of Operations 2.2

Learning Target: Use order of operations to evaluate numerical expressions.

Success Criteria:

- I can identify the operations in a numerical expression.
- I can determine the order to perform the operations in a numerical expression.
- I can evaluate a numerical expression.

FLORIDA STANDARDS
MAFS.5.OA.1.1

Explore and Grow

Two students were asked to find the value of the expression below and they got different answers. Only one student has the correct answer. The students did not make any mistakes in their calculations. How did they get different answers?

$$24 + 16 \div 4 - 2$$

MP **Structure** Why is it important to have rules when finding values of expressions that contain more than one operation?

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Think and Grow: Use Order of Operations

Key Idea A **numerical expression** is an expression that contains numbers and operations. When you **evaluate** a numerical expression, you find the value of the expression.

When evaluating a numerical expression, use a set of rules called the **order of operations**. These rules tell you the order in which to perform the operations.

Order of Operations

1. Perform operations in parentheses.
2. Multiply and divide from left to right.
3. Add and subtract from left to right.

The four basic operations are addition, subtraction, multiplication, and division.



Example Evaluate $19 - 18 \div 6$.

Using the order of operations, divide first. Then subtract.

$19 - 18 \div 6 = 19 - \_\_\_\_\_$ Divide 18 by 6.

$= \_\_\_\_\_$ Subtract 3 from 19.

So, $19 - 18 \div 6 = \_\_\_\_\_$.

Example Evaluate $30 \div (3 + 7) \times 2$.

Using the order of operations, perform the addition in the parentheses first. Then multiply and divide from left to right.

$30 \div (3 + 7) \times 2 = 30 \div \_\_\_\_\_ \times 2$ Perform operation in parentheses.

$= \_\_\_\_\_ \times 2$ Divide 30 by 10.

$= \_\_\_\_\_$ Multiply 3 and 2.

So, $30 \div (3 + 7) \times 2 = \_\_\_\_\_$.

Show and Grow

Evaluate the expression.

1. $24 + 4 \div 2$

2. $12 + (10 - 3) \times 8$

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Name _____

Apply and Grow: Practice

Evaluate the expression.

3. $25 + (10 \div 5)$

4. $10 + 10 + 7$

5. $48 \div (8 - 2)$

6. $(45 + 25) \div 10$

7. $63 - 54 \div 9$

8. $\left(\frac{1}{2} + \frac{1}{2}\right) \times 5$

9. $15 + (16 - 6) \times 1$

10. $(18 + 23 + 22) \div 9$

11. $80 - 6 \times 5 \times 2$

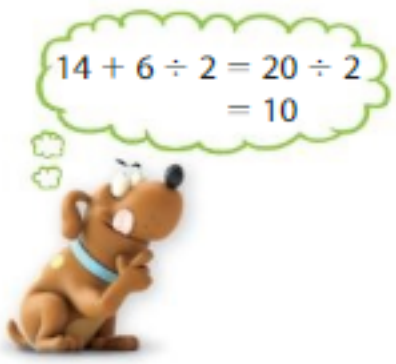
Insert parentheses to make the statement true.

12. $6 + 2 \times 7 = 56$

13. $18 - 6 \div 2 + 5 = 11$

14. $10 + 2 \times 4 - 1 = 16$

15. **YOU BE THE TEACHER** Is Newton correct? Explain.



16. **Writing** Describe how you can evaluate $9 \times (40 + 5)$ two different ways.

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Think and Grow: Modeling Real Life



Example A robotics team orders 14 shirts. The order has a $9 shipping fee. Use the expression $14 \times 12 + 9$ to find how much the team spends on the order.

Evaluate $14 \times 12 + 9$ using the order of operations. Multiply first. Then add.

$14 \times 12 + 9 = \_\_\_\_\_ + 9$ Multiply 14 and 12.

$= \_\_\_\_\_$ Add 168 and 9.

The team spends _____ on the order.

Show and Grow

17. A parking garage has 7 floors with 109 spaces on each floor. There are 486 spaces being used. Use the expression $7 \times 109 - 486$ to find how many spaces are *not* being used.

18. At a fair, you ride the swinging ship 3 times and the bumper cars 5 times. Use the expression $(3 \times 2) + (5 \times 4)$ to find how many tickets you use in all.

Ride	Tickets for Each Ride
Swinging ship	2
Bumper cars	4



19. You download 128 songs and divide them into 4 equal-sized playlists. You delete 1 playlist. Then you download 56 more songs. Use the expression $128 - (128 \div 4) + 56$ to find how many songs you have now.

20. **DIG DEEPER!** A politician buys 3 boxes of campaign buttons. There are 60 buttons in each box. He divides the buttons into 4 equal groups. How many buttons are in each group?

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Name _____

Homework & Practice 2.2

Learning Target: Use order of operations to evaluate numerical expressions.

Example Evaluate $9 + (33 - 12) \div 3$.

Using the order of operations, perform the subtraction in the parentheses first. Then divide. Then add.

$9 + (33 - 12) \div 3 = 9 + \underline{21} \div 3$ Perform operation in parentheses.

$= 9 + \underline{7}$ Divide 21 by 3.

$= \underline{16}$ Add 9 and 7.

So, $9 + (33 - 12) \div 3 = \underline{16}$.

Remember the order of operations:
1. Perform operations in parentheses.
2. Multiply and divide from left to right.
3. Add and subtract from left to right.



Evaluate the expression.

1. $(8 - 2) \times 4$

2. $7 + (6 \div 3)$

3. $5 \times (6 + 2)$

4. $21 + 42 \div 7$

5. $\left(\frac{1}{4} + \frac{2}{4} + \frac{3}{4}\right) \times 2$

6. $86 - 9 \times 6$

7. $56 - 22 \div 2$

8. $27 + 11 \times 4$

9. $21 - (12 + 6) \div 9$

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Evaluate the expression.

10. $9 \times (5 + 15) - 42$

11. $14 + 56 \div 7 - 6$

12. $(106 + 350 + 244) \div 10$

Insert parentheses to make the statement true.

13. $36 - 9 \div 9 = 3$

14. $12 + 8 \div 4 + 1 = 6$

15. $10 + 4 \times 12 - 6 = 34$

16. **YOU BE THE TEACHER** Your friend says that because of the order of operations, the expressions are equivalent. Is your friend correct? Explain.

$10 - (5 \times 2) + 7$ $10 - 5 \times 2 + 7$

17. **Number Sense** Which expressions have a value of 9?

$2 + 1 \times 3$ $3 \times 4 - 3$

$5 + 40 \div 5 - 4$ $40 - 30 \div 10 + 8$

$18 \div (8 + 0 + 18)$ $5 \times (10 - 4) - 21$

18. **Modeling Real Life** Fifth graders at a school write a paper about a historical person for a contest. There are 5 classes of 25 students and 1 class of 28 students participating in the contest. Use the expression $5 \times 25 + 28$ to find how many students participate in the contest.



Martin Luther King Jr.

Review & Refresh

Divide. Then check your answer.

19. $8\overline{)832}$

20. $7\overline{)215}$ R____

21. $5\overline{)5{,}078}$ R____

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Name _____

Write Numerical Expressions

2.3

Learning Target: Write numerical expressions.

Success Criteria:

- I can write a verbal statement as a numerical expression.
- I can use parentheses in an expression appropriately.
- I can interpret an expression.

FLORIDA STANDARDS

MAFS.5.OA.1.1
MAFS.5.OA.1.2

Explore and Grow

Write a real-life problem that can be represented by one of the expressions below. Switch papers with your partner. Which expression represents your partner's problem? Explain.

$7 \times (8 + 5)$ $(7 \times 8) + 5$

MP **Make Sense of Problems** How can parentheses change the meaning of an expression? Explain.

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Think and Grow: Write and Interpret Expressions

Example Write the words as an expression.

Divide 10 by the difference of 9 and 4.

10 ÷ _____

The numerical expression is _____.



Example Write the words as an expression. Then interpret the expression.

Add 54 and 97, then multiply by 2.

(54 + 97) _____

The numerical expression is _____.

The value of the expression is _____ times the sum 54 + 97.

Show and Grow

Write the words as an expression.

1. Multiply 8 and 5, then divide by 4.

2. Multiply the sum of 14 and 18 by 4.

Write the words as an expression. Then interpret the expression.

3. Multiply 3 by the sum of 12 and 3.

4. Subtract 30 from 50, then divide by 10.

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Name _____

Apply and Grow: Practice

Write the words as an expression. Then interpret the expression.

5. Add 238 and 12, then multiply by 3.

6. Subtract 15 from 60, then divide by 9.

Write the words as an expression. Then evaluate the expression.

7. Multiply 5 by the difference of 25 and 20.

8. Add the product of 60 and 4 to the product of 5 and 4.

Write the expression in words.

9. $13 + (4 \times 6)$

10. $(4 + 8) \div 2$

11. Newton has $20. He spends $4 on lunch and $13 at the store. Write an expression to represent the situation.



12. **Writing** Explain how you know which operation to use when writing words as an expression.

13. **Number Sense** Write the words as an expression. Then use a property of addition to write an equivalent expression.

Add 9 to the sum of 21 and 6.

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Think and Grow: Modeling Real Life



Example On your turn of a word game, you draw the card shown and create the word MATH. Your word score is the sum of the points of the letters you use. How many points do you earn on your turn?



Write an expression.

Think: Add _____, _____, _____, and _____, then multiply by _____.

(_____ + _____ + _____ + _____) × _____

Interpret the expression.

You earn _____ times as many points as the value of your word score.

Evaluate the expression.

(3 + 1 + 1 + 4) × 3 = _____ × _____

= _____

So, you earn _____ points on your turn.

Show and Grow

14. You make 2 batches of fruit salad. How many cups of fruit do you use in all?

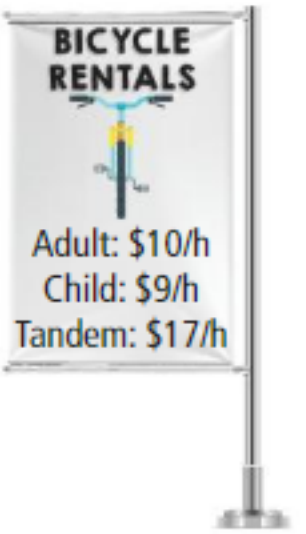
Fruit Salad

- 2 cups strawberries
- $1\frac{1}{2}$ cups blueberries
- $2\frac{1}{2}$ cups grapes
- 1 cup pineapple

15. A customer places an online order for a video game that costs $49 and 3 books that each cost $12. Shipping costs $6. What is the total cost of the order?

16. **DIG DEEPER!** Eight students use 2 sets of 52 cards to play a game. The cards are divided equally among the players. How many cards does each player get?

17. **DIG DEEPER!** How much more does it cost to rent 2 adult bikes for 4 hours than a tandem bike for 4 hours? Explain.



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Name _____

Homework & Practice 2.3

Learning Target: Write numerical expressions.

Example Write the words as an expression.

Multiply 6 by the sum of 10 and 7.

$6 \times (10 + 7)$

The numerical expression is $6 \times (10 + 7)$.

Example Write the words as an expression. Then interpret the expression.

Subtract 95 and 88, then multiply by 3.

$(95 - 88) \times 3$

The numerical expression is $(95 - 88) \times 3$.

The value of the expression is 3 times the difference 95 − 88.

Write the words as an expression.

1. Add 10 to the quotient of 72 and 8.

2. Subtract 55 from the sum of 124 and 56.

Write the words as an expression. Then interpret the expression.

3. Add 14 and 13, then divide by 3.

4. Subtract 29 from 39, then multiply by $\frac{1}{2}$.

Write the words as an expression. Then evaluate the expression.

5. Subtract the product of 5 and 8 from the product of 10 and 9.

6. Add 15 to the quotient of 60 and 3.

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Write the expression in words.

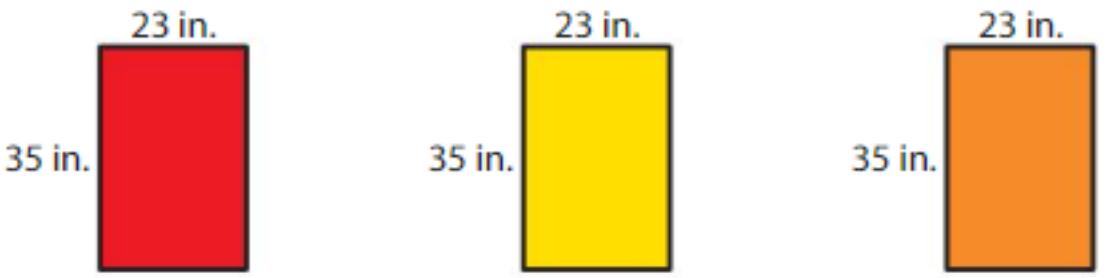
7. $35 - (14 + 17)$

8. $(30 - 20) \times 10$

9. Descartes has \$9. He works 5 hours and earns \$8 each hour. Write an expression to represent the situation.

10. **Open-Ended** Write a real-life problem that can be represented by the phrase "5 more than the sum of 15 and 7."

11. **DIG DEEPER!** Write two different expressions that each represent the combined area of the rectangles. Then evaluate the expressions.



12. **Modeling Real Life** A music teacher replaces the strings on 3 violins, 2 violas, 4 cellos, and 1 bass. There are 4 strings on each of the instruments. How many strings does the teacher replace?

13. **DIG DEEPER!** A customer buys 2 shirts that cost \$10 each and a pair of jeans that costs \$14. What is the customer's total after using the coupon?



Review & Refresh

Subtract.

14. $9\frac{3}{4} - 5\frac{1}{4} =$ _____

15. $6\frac{1}{3} - 3\frac{1}{3} =$ _____

16. $4\frac{7}{12} - 1\frac{11}{12} =$ _____

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Name _____

2.4 Evaluate Expressions with Grouping Symbols

Learning Target: Use order of operations to evaluate expressions with grouping symbols.

Success Criteria:

- I can identify different types of grouping symbols.
- I can evaluate an expression with multiple pairs of grouping symbols.

FLORIDA STANDARDS

MAFS.5.OA.1.1
MAFS.5.OA.1.2

Explore and Grow

Write the words as an expression. How is the expression different from the expressions you wrote in previous lessons?

Multiply the sum of 4 and 5 by the difference of 8 and 7.

MP **Precision** How can you evaluate an expression that has more than one pair of parentheses?

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Think and Grow: Evaluate with Grouping Symbols

Key Idea Parentheses ( ), brackets [ ], and braces { } are called grouping symbols. You can write and evaluate numerical expressions that have more than one pair of grouping symbols.

Perform the operation inside the innermost grouping symbols first.



Order of Operations (with Grouping Symbols)

1. Perform operations in grouping symbols.
2. Multiply and divide from left to right.
3. Add and subtract from left to right.

Example Evaluate $(25 - 5) \div (3 + 1)$.

$(25 - 5) \div (3 + 1) = \_\_\_\_ \div \_\_\_\_$ Perform operations inside parentheses.

$= \_\_\_\_$ Divide 20 by 4.

So, $(25 - 5) \div (3 + 1) = \_\_\_\_$.

Example Evaluate $[60 - (3 + 7)] \times 5$.

$[60 - (3 + 7)] \times 5 = [60 - \_\_\_\_] \times 5$ Perform operation inside parentheses.

The parentheses are the innermost grouping symbols.

$= \_\_\_\_ \times 5$ Perform operation inside brackets.

$= \_\_\_\_$ Multiply 50 and 5.

So, $[60 - (3 + 7)] \times 5 = \_\_\_\_$.



Show and Grow

Evaluate the expression.

1. $(18 - 12) \times (8 \div 4)$

2. $35 - [6 \times (1 + 4)]$

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Name _____

Apply and Grow: Practice

Evaluate the expression.

3. $(60 - 12) \div (3 + 5)$

4. $95 - (26 + 14) \times (4 \div 2)$

5. $(8 + 2) \times (13 + 7 + 5)$

6. $2 \times [(96 - 72) \div 8]$

7. $[(4 + 9) - (30 \div 6)] \times 4$

8. $36 + \{[(7 + 5) \div 6 \times 9] + 24\}$

Write the words as an expression. Then evaluate the expression.

9. Divide the sum of 35 and 28 by the sum of 3 and 4.

10. Add 11 to the product of 4 and 6, then divide by 5.

11. MP **Reasoning** Will the value of $\{3 + [(38 - 10) - 1]\} \div 3$ change when the braces are removed? Explain.

12. DIG DEEPER! Use each symbol once to make the number sentence true.

$+$ $-$ $\times$ $\div$

(8 ____ 2) ____ (20 ____ 4) ____ 11 = 39

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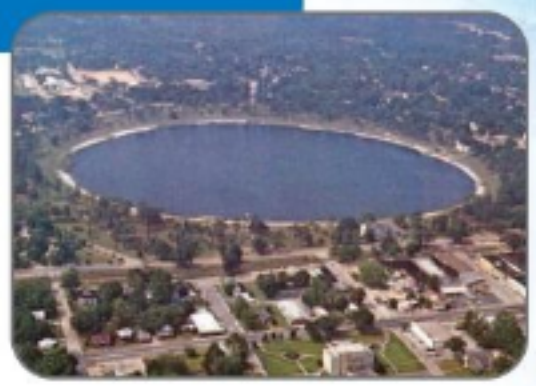
Think and Grow: Modeling Real Life



Lake DeFuniak is located in DeFuniak Springs, Florida. It is one of only two almost perfectly circular lakes in the world. The sidewalk around Lake DeFuniak is $\frac{9}{10}$ mile.

Example A woman walks 2 miles from her house to the lake, walks 3 laps on the sidewalk around the lake, then walks 2 miles back to her house. She does this each day for 3 days. How many miles does the woman walk in all?

Think: How many laps does she walk around the lake?
How far does she walk to and from her house?

Write an expression.

[_____ + (_____ × _____) + _____] × _____

Evaluate the expression.

$[2 + \left(3 \times \frac{9}{10}\right) + 2] \times 3 = [2 +$ _____ $+ 2] \times 3$ Perform operation inside parentheses.

$= [2 + 2 +$ _____$] \times 3$ Commutative Property of Addition

= [_____ + _____] × 3 Add 2 and 2.

= _____ × 3 Perform operation inside brackets.

= _____ Multiply the sum by 3.

So, the woman walks _____ miles in all.

Show and Grow

13. You collect 12 coins and 4 gems, complete 2 missions, and fail to complete 1 mission. How many points do you earn?

Video Game	
Item/Task	**Number of Points**
Coins	+5
Gems	+10
Mission completed	+50
Mission failed	−25

14. DIG DEEPER! A book has 200 pages. You read 10 pages twice each day for 1 week. What fraction of the book, in tenths, do you have left to read?

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Name _____

Homework & Practice 2.4

Learning Target: Use order of operations to evaluate expressions with grouping symbols.

Example Evaluate $(30 + 40) \times (3 + 6)$.

$(30 + 40) \times (3 + 6) = \underline{70} \times \underline{9}$ Perform operations inside parentheses.

$= \underline{630}$ Multiply 70 and 9.

So, $(30 + 40) \times (3 + 6) = \underline{630}$.

Example Evaluate $4 \times [(3 + 9) \div 6]$.

$4 \times [(3 + 9) \div 6] = 4 \times [\underline{12} \div 6]$ Perform operations inside parentheses.

$= 4 \times \underline{2}$ Perform operation inside brackets.

$= \underline{8}$ Multiply 4 and 2.

So, $4 \times [(3 + 9) \div 6] = \underline{8}$.

Evaluate the expression.

1. $15 \div (5 \times 1) - (2 \times 1)$

2. $(7 + 9) \div (2 + 4 + 2)$

3. $(1 + 5) \times (2 + 3)$

4. $[(16 - 14) + (9 \times 4)] \div 2$

5. $70 \div [(463 - 443) \div 2]$

6. $9 \times \{[14 \div 2 + (4 - 1)] - 8\}$

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Write the words as an expression. Then evaluate the expression.

7. Multiply the sum of 4 and 5 by the difference of 14 and 8.

8. Add 23, 26, and 17, then divide by 7.

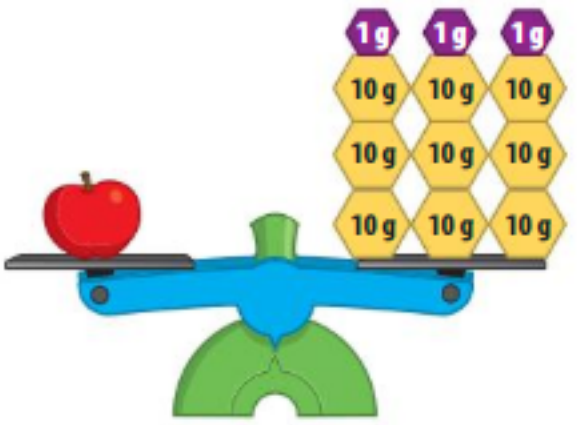
9. **Writing** Explain how to evaluate the expression.

$8 \times [(36 - 33) \times 2]$

10. **Open-Ended** Write and evaluate two equivalent numerical expressions that show the Distributive Property.

11. **Modeling Real Life** Your friend has 3 California postcards, 2 Hawaii postcards, and 4 New York postcards. He gives 1 postcard away, then divides the rest equally among 4 pages of a scrapbook. How many postcards are on each page?

12. **Modeling Real Life** A nutritionist recommends that fifth graders should eat about 305 grams of fruit each day. You eat the apple shown. How many more grams of fruit should you eat today?



Review & Refresh

Find the product. Check whether your answer is reasonable.

13. $639 \times 5 =$ _____

14. $7 \times 1{,}926 =$ _____

15. $507 \times 3 =$ _____

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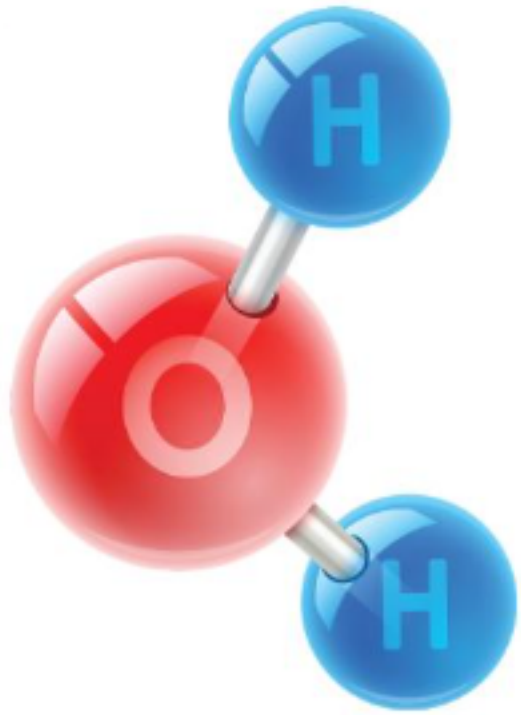
Name _____

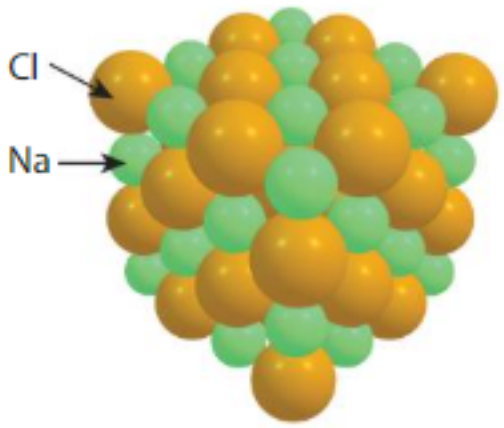
Performance Task 2

Atoms are the basic building blocks of matter. When two or more atoms bond together, they form a molecule or a compound.

- The chemical formula for a water molecule is H_2O because it has 2 atoms of hydrogen (H) and 1 atom of oxygen (O).
- The chemical formula for the compound sodium chloride, also known as table salt, is NaCl because it has 1 atom of sodium (Na) and 1 atom of chlorine (Cl) in a repeating pattern.



1. How many atoms are in 52 molecules of water?



2. You and your friend want to make models for a science fair.

a. Your friend wants to make a model of sodium chloride. The model has the same number of green and orange atoms. There are $4 \times 4 \times 4$ atoms in all. How many orange atoms do you need?

b. You make a model of a salt-water mixture. You use 14 atoms of sodium, 14 atoms of chlorine, and 10 molecules of H_2O. Write an expression that represents the number of atoms in your salt-water model. Use the Distributive Property to rewrite your expression. Find the number of atoms in your model.

c. You and your friend buy 3 boxes of foam balls to represent atoms. There are 45 foam balls in each box. How many foam balls are left after you and your friend make the models above?

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Expression Boss

Directions:

1. Each player rolls three dice to complete the numerical expression. Players can arrange the numbers however they choose.
2. Each player evaluates the numerical expression.
3. Players compare their values. The player with the greater value earns one point.
4. If the values are equal, each player earns one point.
5. The player with the most points at the end of the game wins!

Round	Numerical Expression	Value	Points
1	(____ + ____) × ____		
2	(____ × ____) − ____		
3	(____ + ____) − ____		
4	____ × (____ − ____)		
5	____ + ____ − ____		
6	____ + ____ × ____		
Score			



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Name _____

Chapter Practice 2

2.1 Number Properties

Complete the equation. Identify the property shown.

1. $56 \times$ _____ $= 0$

2. $8 + (242 + 32) = (8 + 242) +$ _____

Use the Distributive Property to find the product.

3. 8×64

4. 57×9

Use a property to find the sum or product. Identify the property you used.

5. 3×92

6. $41 \times 6 \times 0$

7. $13 + 24 + 57$

8. **Modeling Real Life** The graph shows the number of votes each apple received. How many people were surveyed? Identify the property you used.

Favorite Apple	
Fuji	🍎🍎🍎🍎
Granny Smith	🍎🍎🍎
Honeycrisp	🍎🍎🍎🍎

Each 🍎 = 4 votes.

2.2 Order of Operations

Evaluate the expression.

9. $18 \times (9 - 3) \div 2$

10. $50 - 18 \div 3 \times 7$

11. $(36 + 14) \times 4 \div 5$

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12. MP **Number Sense** Which expressions have a value of 6?

$2 + 1 \times 2$ $\quad$ $5 \times 2 - 4$ $\quad$ $70 - 60 \div 10 + 5$

$7 \times (6 - 4) - 8$ $\quad$ $12 \div 2 + (0 + 6)$ $\quad$ $8 + 18 \div 2 - 11$

2.3 Write Numerical Expressions

Write the words as an expression. Then interpret the expression.

13. Multiply 8 by the difference of 54 and 49.

14. Subtract 58 from 94, then divide by 4.

15. Your friend buys a bag of 24 party favors and a bag of 16 party favors. She shares them equally among 5 friends. Write an expression to represent the problem.

Write the expression in words.

16. $45 + (7 \times 8)$

17. $(18 \div 2) - 5$

2.4 Evaluate Expressions with Grouping Symbols

Evaluate the expression.

18. $(28 - 14) \times (42 \div 6)$

19. $6 \times [(21 - 9) \div 3]$

20. $[(2 \times 2) + (10 \div 5)] \times 4$

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3 Add and Subtract Decimals

- How many inches of rainfall do you think your city gets on a rainy day?
- Your city needs 1.2 more inches of rainfall to break its record for the greatest rainfall in 24 hours. How can you determine the record amount of rainfall?

Chapter Learning Target:
Understand adding and subtracting decimals.

Chapter Success Criteria:

- I can use rounding.
- I can use place value to line up the numbers in a problem.
- I can solve a problem using decimals.
- I can estimate to check my answer.



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Name _____

3 Vocabulary

Review Words

compatible numbers
estimate
expanded form
standard form
word form

Organize It

Use the review words to complete the graphic organizer.

a number that is close to an exact number

- Round to the nearest 10

  38 → 40
  + 46 → + 50
  90

  So, 38 + 46 is about 90.

- _____

  38 → 40
  + 46 → + 45
  85

  So, 38 + 46 is about 85.

Define It

Match.

1. expanded form
2. standard form
3. word form

15,203

fifteen thousand, two hundred three

10,000 + 5,000 + 200 + 3

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Name _____

3.1 Estimate Sums and Differences

Learning Target: Use rounding or compatible numbers to estimate sums and differences of decimals.

Success Criteria:

- I can use rounding to estimate a sum or difference.
- I can use compatible numbers to estimate a sum or difference.

FLORIDA STANDARDS

MAFS.5.NBT.1.4
MAFS.5.NBT.2.7

Explore and Grow

Estimate each sum or difference.

$$\begin{array}{rcl} 23.08 & \longrightarrow & \square \\ +\ 59.55 & \longrightarrow & +\ \square \\ \hline & & \square \end{array} \qquad \begin{array}{rcl} 98.82 & \longrightarrow & \square \\ -\ 76.47 & \longrightarrow & -\ \square \\ \hline & & \square \end{array}$$

MP **Construct Arguments** Compare your answers to your partner's answers. Explain why they are the same or why they are different.

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Think and Grow: Estimate Sums and Differences

You can use rounding or compatible numbers to estimate sums and differences of decimals.

Example Estimate 27.21 + 48.73.

One Way: Use rounding. Round each addend to the nearest whole number. Then find the sum of the rounded numbers.

$$\begin{array}{r} 27.21 \longrightarrow \square \\ +\ 48.73 \longrightarrow +\ \square \\ \hline \square \end{array}$$

So, 27.21 + 48.73 is about _____.

Another Way: Use compatible numbers.

$$\begin{array}{r} 27.21 \longrightarrow \square \\ +\ 48.73 \longrightarrow +\ \square \\ \hline \square \end{array}$$

So, 27.21 + 48.73 is about _____.

Example Estimate 388.5 − 103.2.

One Way: Use rounding. Round each number to the nearest ten. Then find the difference of the rounded numbers.

$$\begin{array}{r} 388.5 \longrightarrow \square \\ -\ 103.2 \longrightarrow -\ \square \\ \hline \square \end{array}$$

So, 388.5 − 103.2 is about _____.

Another Way: Use compatible numbers.

$$\begin{array}{r} 388.5 \longrightarrow \square \\ -\ 103.2 \longrightarrow -\ \square \\ \hline \square \end{array}$$

So, 388.5 − 103.2 is about _____.

Show and Grow

Estimate the sum or difference.

1. $\begin{array}{r} 112.18 \\ +\ 47.99 \\ \hline \end{array}$

2. $\begin{array}{r} 68.8 \\ -\ 29.7 \\ \hline \end{array}$

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Name _____

Apply and Grow: Practice

Estimate the sum or difference.

3.
$$\begin{array}{r} 7.95 \\ -\ 1.72 \\ \hline \end{array}$$

4.
$$\begin{array}{r} 237.5 \\ +\ 345.1 \\ \hline \end{array}$$

5. $67.5 + 15.1$

6. $418.9 - 14.7$

7. $13.9 - 8.21$

8. $208.6 + 56.9$

9. MP **Number Sense** Descartes estimates a sum by rounding each number to the nearest ten. His estimate is 140. Which sums could he have estimated?

$83.6 + 59.8$ $106.92 + 44.68$ $130.8 + 4.68$ $73.5 + 67.4$

10. MP **Precision** Does rounding $209.11 - 104.53$ to the nearest ten or to the nearest hundred give an estimate that is closer to the actual difference? Explain.

11. DIG DEEPER! Newton packs a suitcase to fly on a plane. His suitcase needs to weigh less than 50.0 pounds. Should Newton overestimate or underestimate the weight of his suitcase? Explain.

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Think and Grow: Modeling Real Life

Example About how many feet taller is One World Trade Center than the Empire State Building?

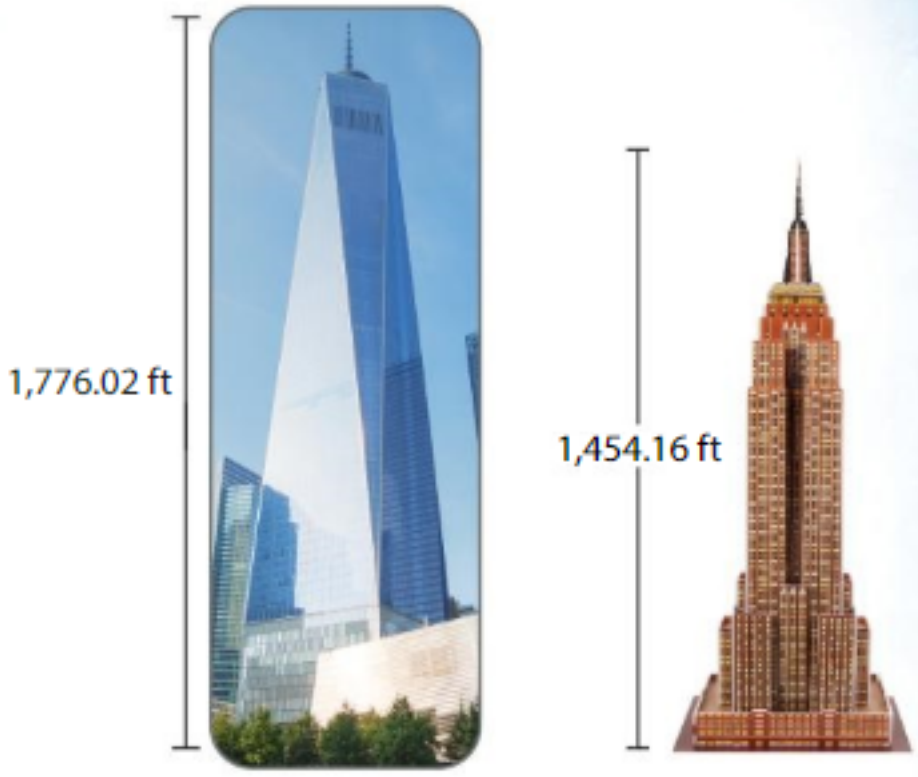
Round the height of each building to the nearest hundred because you do not need a precise answer.

One World Trade Center: 1,800 feet

Empire State Building: 1,500 feet

Subtract the estimated height of the Empire State Building from the estimated height of One World Trade Center.

$$\begin{array}{r} 1{,}800 \\ -\ 1{,}500 \\ \hline \end{array}$$



One World Trade Center

Empire State Building

One World Trade Center is about _____ feet taller than the Empire State Building.

Show and Grow



African elephant: 5.7 tons



Hippopotamus: 2.3 tons

12. About how many more tons does the African elephant weigh than the hippopotamus?

13. One cup of wild rice has 6.5 grams of protein. One cup of shredded chicken has 36.9 more grams of protein than 1 cup of wild rice. About how many grams of protein are in 1 cup of chicken?

14. The speed Earth orbits the Sun is 18.5 miles per second. This speed is 3.3 miles per second slower than the speed Venus orbits the Sun. About how fast does Venus orbit the Sun?

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Name _____

Homework & Practice 3.1

Learning Target: Use rounding or compatible numbers to estimate sums and differences of decimals.

Example Estimate 734.6 − 285.3.

One Way: Use rounding. Round each number to the nearest ten. Then find the difference of the rounded numbers.

$$\begin{array}{rcr} 734.6 & \longrightarrow & 730 \\ -\ 285.3 & \longrightarrow & -\ 290 \\ \hline & & \boxed{440} \end{array}$$

So, 734.6 − 285.3 is about 440 .

Another Way: Use compatible numbers.

$$\begin{array}{rcr} 734.6 & \longrightarrow & 750 \\ -\ 285.3 & \longrightarrow & -\ 300 \\ \hline & & \boxed{450} \end{array}$$

So, 734.6 − 285.3 is about 450 .

Estimate the sum or difference.

1. $\begin{array}{r} 76.81 \\ +\ 2.17 \\ \hline \end{array}$

2. $\begin{array}{r} 79.1 \\ -\ 32.8 \\ \hline \end{array}$

3. 418.44 − 23.61

4. 90.7 + 2.3

5. 6.24 − 3.8

6. 837.51 + 149.27

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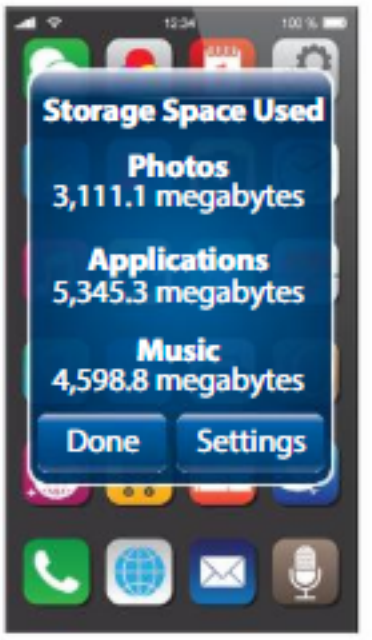
7. **Open-Ended** Write a decimal addition problem that has an estimated sum of 35.

8. MP **Reasoning** Describe a situation when you would estimate the difference of 25.4 and 19.8 to the nearest whole number.

9. **Modeling Real Life** Your friend participates in a 3.1-mile race. She walks for 1.4 miles of the race and runs the rest. About how many miles does your friend run?

10. DIG DEEPER! Your phone has 16,000 megabytes of total storage space. About how much storage space is free?



Review & Refresh

Find the sum.

11. $\frac{2}{8} + \frac{4}{8} =$ _____

12. $\frac{1}{2} + \frac{5}{2} =$ _____

13. $1 + \frac{1}{4} =$ _____

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Name _____

Use Models to Add or Subtract Decimals

3.2

Learning Target: Use models to add or subtract decimals.

Success Criteria:

- I can use base ten blocks to add or subtract decimals.
- I can make quick sketches to add or subtract decimals.

FLORIDA STANDARDS

MAFS.5.NBT.2.7

Explore and Grow

Use base ten blocks to find 1.4 + 0.7.



1
one

0.1
one tenth

0.01
one hundredth

Use base ten blocks to find 1.16 − 0.89.

MP **Repeated Reasoning** Why can you use base ten blocks to model ones, tenths, and hundredths?

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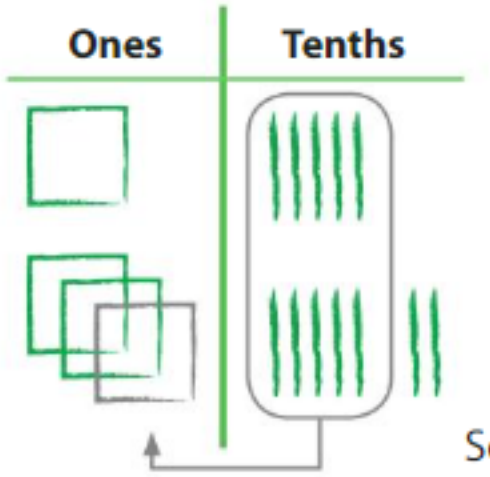
Think and Grow: Use Models to Add or Subtract Decimals

You have used models to add or subtract whole numbers. You can use similar models to add or subtract decimals.

Example Find 1.5 + 2.7.

Make a quick sketch.
Add the tenths, then the ones.

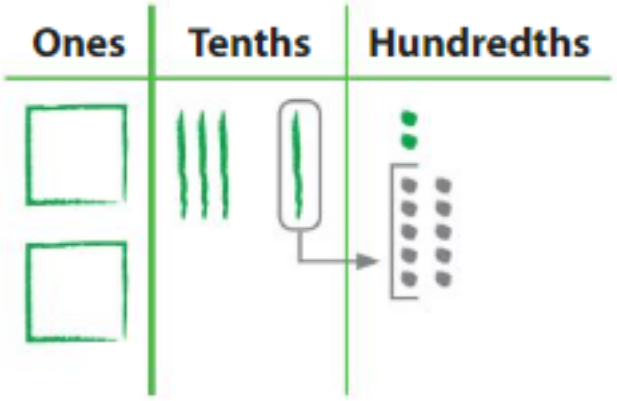
Regroup 10 tenths as 1 one.



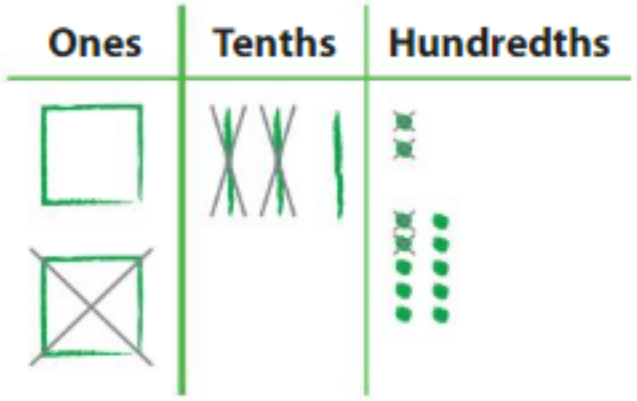
So, 1.5 + 2.7 = _____.

Example Find 2.42 − 1.24.

Make a quick sketch. Regroup 1 tenth as 10 hundredths.



Subtract the hundredths, then the tenths, then the ones.



So, 2.42 − 1.24 = _____.

Show and Grow

Make a quick sketch to find the sum or difference.

1. 3.15 + 0.92 = _____

Ones	Tenths	Hundredths

2. 1.26 − 0.83 = _____

Ones	Tenths	Hundredths

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Name _____

Apply and Grow: Practice

Make a quick sketch to find the sum or difference.

3. $1.61 + 0.22 =$ _____

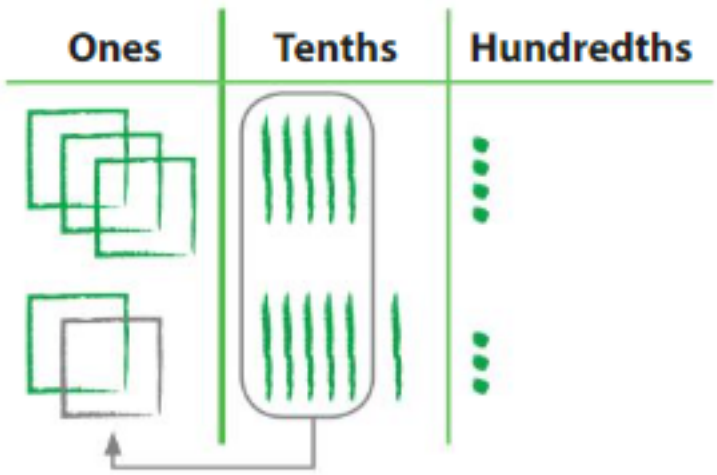
4. $2.4 - 1.3 =$ _____

5. $2.2 + 0.9 =$ _____

6. $1.56 - 1.08 =$ _____

7. MP **Number Sense** Newton adds two decimals that are each greater than 0.5. What can you conclude about the sum?

8. MP **Structure** Write an equation represented by the quick sketch.



9. DIG DEEPER! Use a model to find $1.31 - 0.4$.

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Think and Grow: Modeling Real Life

Example How much longer is the duration of the wooden roller-coaster ride than the duration of the steel roller-coaster ride?

Wooden



Ride duration: 4.25 minutes

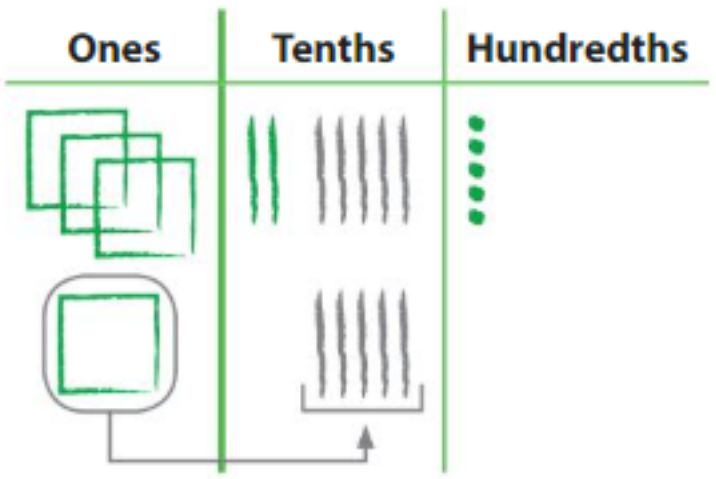
Steel



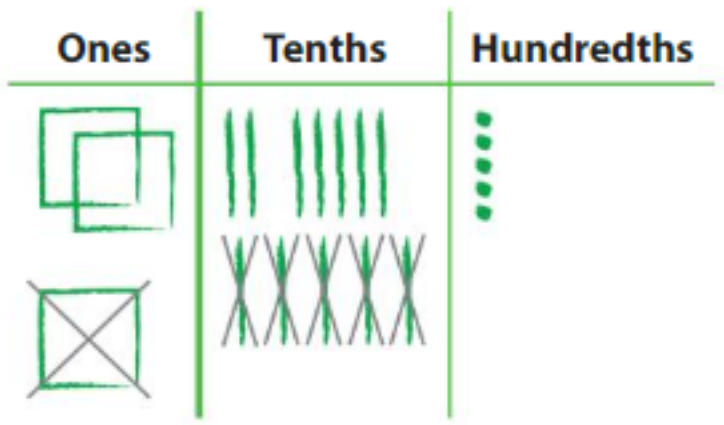
Ride duration: 1.50 minutes

Find the difference of the durations: $4.25 - 1.50$.

Make a quick sketch of 4.25.
Subtract the hundredths.
Regroup 1 one as 10 tenths.



Subtract the tenths, then the ones.

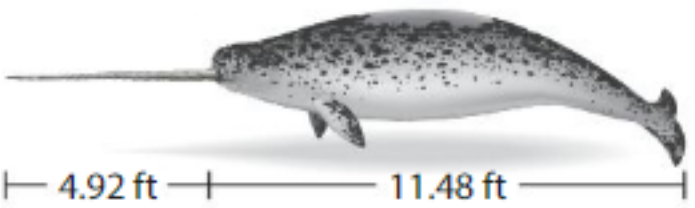


So, $4.25 - 1.50 =$ _____

Show and Grow

10. A football player completes a 40-yard dash in 5.84 seconds. Another player completes it in 4.56 seconds. How much longer does it take the first player to complete the 40-yard dash than the second player?

11. What is the total length of the narwhal?



12. **DIG DEEPER!** An Olympic gymnast scores 6.6 points for skill. She starts with 10.0 points for execution, then loses 0.4 point for execution errors. What is the gymnast's final score?

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Name _____

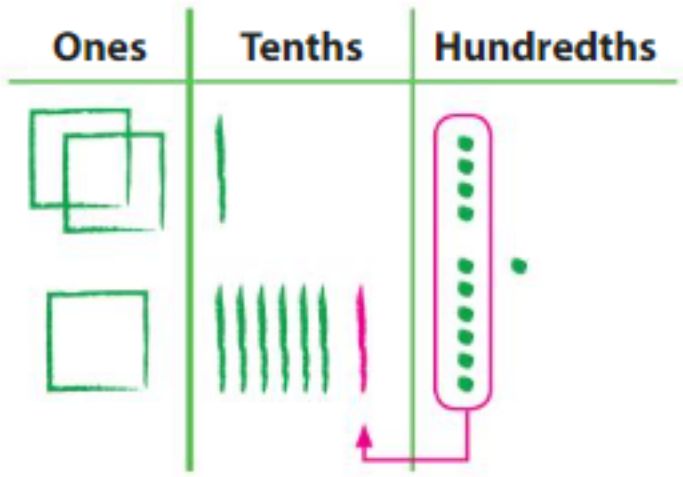
Homework & Practice 3.2

Learning Target: Use models to add or subtract decimals.

Example Find 2.14 + 1.67.

Make a quick sketch. Add the hundredths, then the tenths, then the ones.

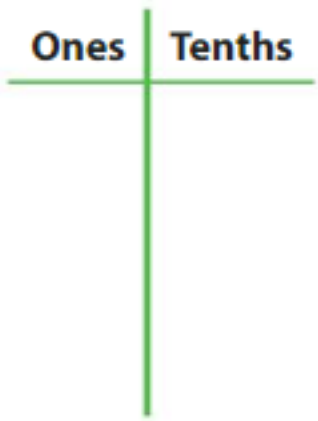
Regroup 10 hundredths as 1 tenth.



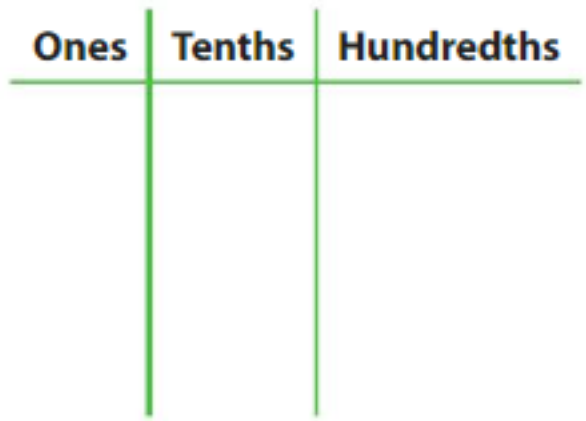
So, 2.14 + 1.67 = 3.81.

Make a quick sketch to find the sum or difference.

1. 2.6 + 1.3 = _____



2. 1.36 − 0.25 = _____



3. 0.84 − 0.17 = _____

4. 1.26 + 1.55 = _____

5. 2.6 − 1.9 = _____

6. 3.9 + 0.6 = _____

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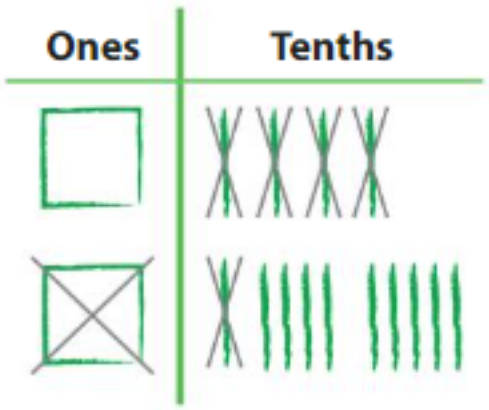
7. **Structure** Write an equation represented by the quick sketch.



8. **Number Sense** What is the greatest possible difference of two decimals to the hundredths place that are between 0 and 1?

9. **DIG DEEPER!** Write a decimal addition equation that requires regrouping the tenths. Explain how you know you need to regroup to add.

10. **Modeling Real Life** The fastest 1-mile sack race was completed in 16.68 minutes. The fastest 1-mile piggyback race was completed in 11.18 minutes. How much longer did it take to complete the sack race than the piggyback race?

11. **Modeling Real Life** How many pounds of honey do the hives produce in all?



Hive A: 15.25 lb

Hive B: 20.98 lb

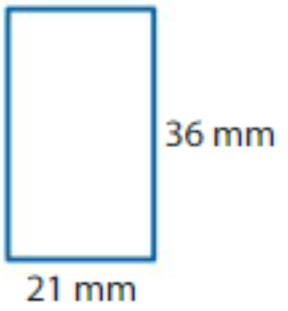
Review & Refresh

Find the perimeter of the rectangle.

12.



13.



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Name _____

Add Decimals 3.3

Learning Target: Add decimals and check whether the sum is reasonable.

Success Criteria:

- I can add like place values to add decimals.
- I can add decimals, regrouping when needed.
- I can estimate a sum to check whether my answer is reasonable.

FLORIDA STANDARDS
MAFS.5.NBT.2.7

Explore and Grow

Find the sum.



$$\begin{array}{r} 143 \\ +\ 238 \\ \hline \end{array}$$

Use a model to find the sum. Draw your model.

$$\begin{array}{r} 1.43 \\ +\ 2.38 \\ \hline \end{array}$$

MP **Construct Arguments** How is adding decimals similar to adding whole numbers?

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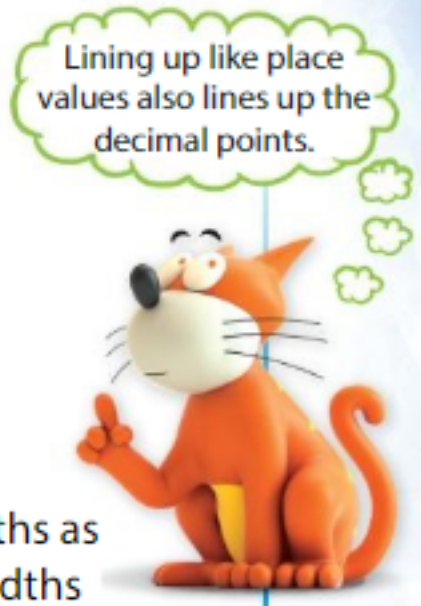
Think and Grow: Add Decimals

To add decimals, add like place values.



Example Add: 52.76 + 38.18. Estimate _____

Use place value to line up the addends.

```
  52.76
+ 38.18
```

Add the hundredths, and then the tenths. Regroup if necessary.

```
   1
  52.76
+ 38.18
  94
```

Regroup 14 hundredths as 1 tenth and 4 hundredths

Add the ones, and then the tens. Regroup if necessary.

```
 1  1
  52.76
+ 38.18
  90.94
```

Regroup 10 ones.

The sum is _____. Reasonable? _____ is close to _____. ✓

Show and Grow

Find the sum. Check whether your answer is reasonable.

1.
```
  3.7
+ 1.9
```

2.
```
  0.94
+ 0.82
```

3.
```
  82.9
+ 10.8
```

4.
```
  11.06
+  5.45
```

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Name _____

Apply and Grow: Practice

Find the sum. Check whether your answer is reasonable.

5.
$$\begin{array}{r} 7.82 \\ +\ 1.07 \\ \hline \end{array}$$

6.
$$\begin{array}{r} 23.6 \\ +\ 15.1 \\ \hline \end{array}$$

7.
$$\begin{array}{r} 562.65 \\ +\ 78.04 \\ \hline \end{array}$$

8. $2.5 + 4.6 =$ _____

9. $107.5 + 63.5 =$ _____

10. $49.87 + 32.53 =$ _____

11. $96.5 + 4.1 =$ _____

12. MP **Number Sense** Which expressions have a sum greater than 24.7?

$20.9 + 3.8$

$15.96 + 9.51$

$14.23 + 9.85$

$10.62 + 14.11$

13. MP **Reasoning** Your friend finds $34.5 + 6.8$ and gets a sum of 413. Without adding, explain how you know your friend's answer is *not* correct.

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Think and Grow: Modeling Real Life

Example You have 6.5 megabytes of storage space left on your tablet. Do you have enough space to download both of the ebooks?

Ebook	File Size
Tale of the Monster	3.8 megabytes
In the Game	2.5 megabytes

Add the ebook file sizes.

$$\begin{array}{r} 3.8 \\ +\ 2.5 \\ \hline \end{array}$$

Compare the sum of the file sizes to the available space on your tablet.

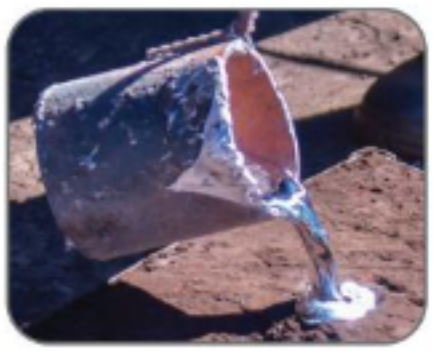
You _____ have enough room to download both ebooks.

Show and Grow

14. A chef needs 3.75 pounds of fish for a dinner party. She catches a fish that is 2.50 pounds and another fish that is 1.75 pounds. Does she catch enough fish for her dinner party?

15. Your school's long jump record is 5.51 meters. You jump 3.38 meters on your first attempt. Your second attempt is 1.56 meters longer than your first. Do you break your school's record?

16. The melting point of aluminum is 403.86 degrees Celsius cooler than the melting point of gold. What is the melting point of gold?



The melting point of aluminum is 660.32 degrees Celsius.

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Name _____

Homework & Practice 3.3

Learning Target: Add decimals and check whether the sum is reasonable.

Example Add: 23.6 + 17.8.

Estimate $24 + 18 = 42$

Use place value to line up the addends.

$$\begin{array}{r} 23.6 \\ +\ 17.8 \\ \hline \end{array}$$

Add the tenths. Regroup if necessary.

$$\begin{array}{r} {\scriptstyle 1} \\ 23.6 \\ +17.8 \\ \hline 4 \end{array}$$

Add the ones, and then the tens. Regroup if necessary.

$$\begin{array}{r} {\scriptstyle 11} \\ 23.6 \\ +17.8 \\ \hline 41.4 \end{array}$$

You can also use compatible numbers to estimate. $25 + 15 = 40$.



The sum is 41.4 .

Reasonable? 41.4 is close to 42 . ✓

Find the sum. Check whether your answer is reasonable.

1.
$$\begin{array}{r} 1.3 \\ +\ 7.5 \\ \hline \end{array}$$

2.
$$\begin{array}{r} 601.58 \\ +\ 82.31 \\ \hline \end{array}$$

3. $19.73 + 7.16 =$ _____

4. $84.6 + 44.7 =$ _____

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Find the sum. Check whether your answer is reasonable.

5. $123.98 + 47.65 =$ _____

6. $427.8 + 13.2 =$ _____

7. **Reasoning** Your friend adds 46.7 and 5.4. Without calculating, is the sum greater than or less than 51? Explain.

8. **Writing** Explain why it is important to use place value to line up the numbers when adding decimals.

9. **Modeling Real Life** You need 10.5 pounds of fruit for a fruit salad. You buy 3.8 pounds of apples and 6.7 pounds of pears. Do you buy enough fruit?



10. **Modeling Real Life** A scientist has 200.59 grams of mercury. She has 135.23 fewer grams of zinc. How many grams of zinc does she have?

Review & Refresh

Find the factor pairs for the number.

11. 24

12. 36

13. 17

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Name _____

Subtract Decimals 3.4

Learning Target: Subtract decimals and check my answer.

Success Criteria:

- I can subtract like place values to subtract decimals.
- I can subtract decimals, regrouping when needed.
- I can estimate a difference or use addition to check my answer.

FLORIDA STANDARDS
MAFS.5.NBT.2.7

Explore and Grow

Find the difference.



$$\begin{array}{r} 427 \\ -\ 156 \\ \hline \end{array}$$

Use a model to find the difference. Draw your model.

$$\begin{array}{r} 4.27 \\ -\ 1.56 \\ \hline \end{array}$$

MP **Construct Arguments** How is subtracting decimals similar to subtracting whole numbers?

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Think and Grow: Subtract Decimals

To subtract decimals, subtract like place values.

Example Subtract: $18.93 - 7.66$.

Use place value to line up the numbers.

$$\begin{array}{r} 18.93 \\ -\ 7.66 \\ \hline \end{array}$$

Subtract the hundredths, and then the tenths. Regroup if necessary.

$$\begin{array}{r} {\scriptstyle 8\,13} \\ 18.\not{9}\not{3} \\ -\ 7.66 \\ \hline 27 \end{array}$$

Regroup 9 tenths and 3 hundredths as 8 tenths and 13 hundredths.

Subtract the ones, and then the tens. Regroup if necessary.

$$\begin{array}{r} {\scriptstyle 8\,13} \\ 18.\not{9}\not{3} \\ -\ 7.66 \\ \hline 11.27 \end{array}$$

The difference is _____.

Check: Use addition to check your answer.

$$\begin{array}{r} 11.27 \\ +\ 7.66 \\ \hline \end{array}$$

Remember, you can estimate $19 - 8 = 11$ to check whether your answer is reasonable.



Remember to write the decimal point!



Show and Grow

Find the difference. Then check your answer.

1. $\begin{array}{r} 71.6 \\ -\ 35.3 \\ \hline \end{array}$

2. $\begin{array}{r} 63.08 \\ -\ 52.43 \\ \hline \end{array}$

3. $\begin{array}{r} 24.75 \\ -\ 9.19 \\ \hline \end{array}$

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Name _____

Apply and Grow: Practice

Find the difference. Then check your answer.

4.
$$\begin{array}{r} 7.5 \\ -\ 5.7 \\ \hline \end{array}$$

5.
$$\begin{array}{r} 83.92 \\ -\ 2.81 \\ \hline \end{array}$$

6.
$$\begin{array}{r} 14.6 \\ -\ 8.9 \\ \hline \end{array}$$

7. $856.02 - 48.12 =$ _____

8. $3.76 - 0.53 =$ _____

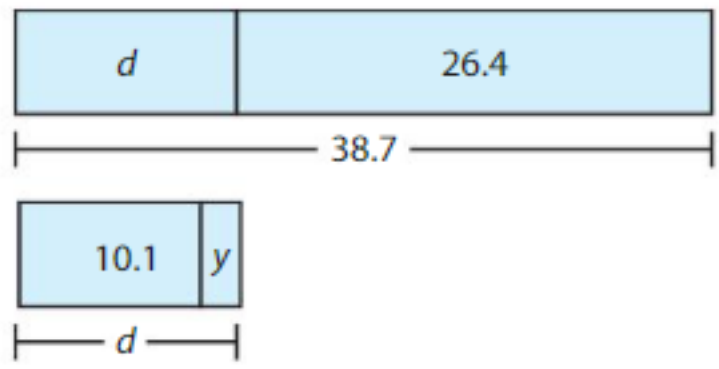
9. $27.5 - 21.7 =$ _____

10. $737.2 - 2.8 =$ _____

11. **YOU BE THE TEACHER** Your friend finds $534.8 - 28.9$. Is your friend correct? Explain.

$$\begin{array}{r} 534.8 \\ -\ 28.9 \\ \hline 245.8 \end{array}$$

12. **DIG DEEPER!** Find y.



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Think and Grow: Modeling Real Life



Example The world record for the longest dog tongue is 18.58 centimeters. The previous record was 11.43 centimeters. By how many centimeters was the record broken?

Subtract the the previous record, 11.43 centimeters, from the current record, 18.58 centimeters.

$$\begin{array}{r} 18.58 \\ -\ 11.43 \\ \hline 7.15 \end{array}$$

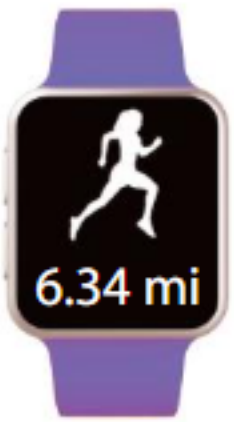
Subtract the hundredths, then the tenths, then the ones, and then the tens.

So, the record was broken by _____ centimeters.

Show and Grow

13. The average high summer temperature in Death Valley, California, is 46.7 degrees Celsius. The hottest temperature ever recorded is 56.7 degrees Celsius. How much greater is the hottest recorded temperature than the average high temperature?

14. An athlete's fitness tracker reads 2.69 miles at noon. The figure shows the athlete's fitness tracker before going to sleep that night. How many miles were recorded after noon?



15. DIG DEEPER! Your friend is using a pattern to knit a 139.7-centimeter-long scarf. He has already knitted 61.8 centimeters. How many centimeters of scarf does he have left to knit? Write your answer as a mixed number.

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Name _____

Homework & Practice 3.4

Learning Target: Subtract decimals and check my answer.

Example Subtract: 431.6 − 17.8.

Use place value to line up the numbers.

$$\begin{array}{r} 431.6 \\ -\ 17.8 \\ \hline \end{array}$$

Subtract the tenths. Regroup if necessary.

$$\begin{array}{r} {\scriptstyle 0\ 16} \\ 43\not{1}.\not{6} \\ -\ 17.8 \\ \hline 8 \end{array}$$

Subtract the ones, then the tens, and then the hundreds. Regroup if necessary.

$$\begin{array}{r} {\scriptstyle 2\ 10} \\ {\scriptstyle \not{0}\ 16} \\ 4\not{3}\not{1}.\not{6} \\ -\ 17.8 \\ \hline 413.8 \end{array}$$

The difference is 413.8.

Check: Use addition to check your answer.

$$\begin{array}{r} {\scriptstyle 11} \\ 413.8 \\ +\ 17.8 \\ \hline 431.6 \end{array}$$

Find the difference. Then check your answer.

1. $\begin{array}{r} 34.5 \\ -\ 21.5 \\ \hline \end{array}$

2. $\begin{array}{r} 996.74 \\ -\ 38.51 \\ \hline \end{array}$

3. $\begin{array}{r} 23.5 \\ -\ 3.8 \\ \hline \end{array}$

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Find the difference. Then check your answer.

4. $856.02 - 48.12 =$ _____

5. $3.76 - 0.53 =$ _____

6. $27.5 - 21.7 =$ _____

7. $737.2 - 2.8 =$ _____

8. MP **Number Sense** Which statements describe the difference of 134.6 and 78.9?

The difference is 55.7.

The difference is greater than 55.

The difference is less than 55.07.

9. DIG DEEPER! Find the missing digits.

$$\begin{array}{r} 45.\square \\ -\ \ 9.3 \\ \hline \square 5.8 \end{array}$$

10. **Modeling Real Life** The world record for the longest fingernails on a pair of female hands is 576.41 centimeters. The world record for the longest fingernails on a single hand is 909.60 centimeters. How much longer is the world record for the longest fingernails on a single hand than the world record for the longest fingernails on a pair of female hands?

Review & Refresh

Find the product.

11. $80 \times 10 =$ _____

12. $30 \times 90 =$ _____

13. $60 \times 70 =$ _____

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Name _____

Add and Subtract Decimals

3.5

Learning Target: Use addition and subtraction to evaluate expressions involving decimals.

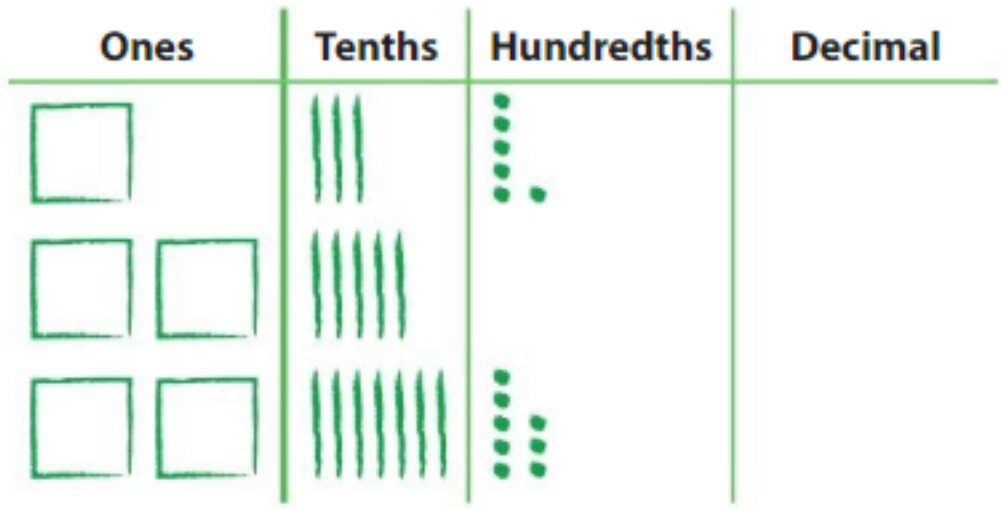
Success Criteria:

- I can add and subtract like place values.
- I can evaluate expressions with three decimals.
- I can estimate the value of an expression.

FLORIDA STANDARDS
MAFS.5.NBT.2.7

Explore and Grow

Add the decimals.



Ones	Tenths	Hundredths	Decimal
□	|||	⁘	
□ □	|||||		
□ □	||||||||	⁙	

MP **Reasoning** How did you find the sum? What other ways can you find the sum?

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Think and Grow: Add and Subtract Decimals

Example Add: $7.39 + 4.16 + 9$. Estimate _____

Use place value to line up the addends. Add the hundredths, then the tenths, and then the ones.

$$\begin{array}{r} {\scriptstyle 1} \\ 7.39 \\ 4.16 \\ +\ 9.00 \\ \hline 20.55 \end{array}$$



So, $7.39 + 4.16 + 9 =$ _____.

Reasonable? _____ is close to _____. ✓

Example Find $18.46 + 13.31 - 5.6$. Estimate _____

Use order of operations.

Step 1: Add: $18.46 + 13.31$.

$$\begin{array}{r} {\scriptstyle 1} \\ 18.46 \\ +\ 13.31 \\ \hline 31.77 \end{array}$$

Step 2: Subtract: $31.77 - 5.6$.

$$\begin{array}{r} {\scriptstyle 211} \\ 3\not{1}.77 \\ -\ 5.60 \\ \hline 26.17 \end{array}$$

So, $18.46 + 13.31 - 5.6 =$ _____.

Reasonable? _____ is close to _____. ✓

Show and Grow

Evaluate. Check whether your answer is reasonable.

1. $6.84 + 2.9 + 5.22 =$ _____

2. $41.55 - 14.09 + 42.4 =$ _____

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Name _____

Apply and Grow: Practice

Evaluate. Check whether your answer is reasonable.

3. $5.3 - 1.7 - 2 =$ _____

4. $14.08 + 6.15 - 9.3 =$ _____

5. $24.7 - 5.1 + 3.75 =$ _____

6. $32.6 + 6 + 15.1 =$ _____

7. You have $35.50. You buy a movie for $15.89 and music for $12.50. How much money do you have left?

8. You ride your bike each day over the weekend. How far do you ride your bike altogether?

Day	Distance (miles)
Friday	1.6
Saturday	2.85
Sunday	3.1

9. MP **Logic** Your friend finds $5.31 + 2.8 - 1.27$ and gets the answer 4.32. Is your friend's answer reasonable? Explain.

10. DIG DEEPER! Find the missing digits.

$$\begin{array}{r} 45.\square 5 \\ 7.3\square \\ +\ 20.36 \\ \hline \square 2.91 \end{array}$$

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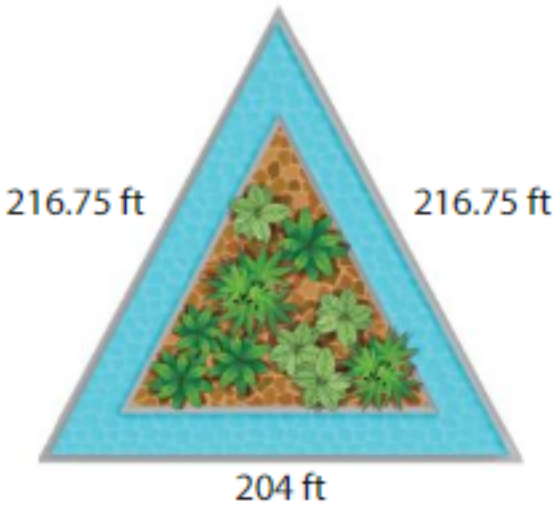
Think and Grow: Modeling Real Life

Example A lifeguard walks around the perimeter of the lazy river ride. How far does the lifeguard walk?



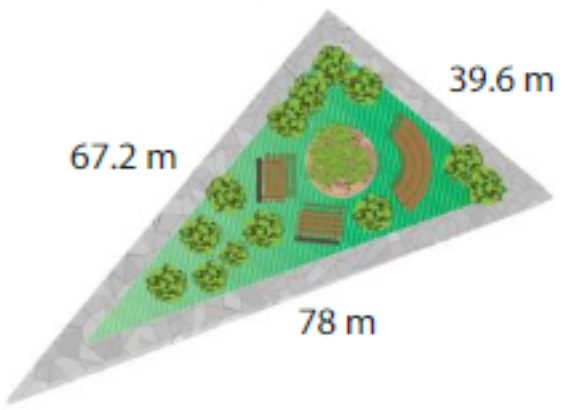
Find the perimeter of the lazy river by adding all of the side lengths.

$$\begin{array}{r} 216.75 \\ 216.75 \\ +\ 204.00 \\ \hline \end{array}$$

The lifeguard walks _____ feet.

Show and Grow

11. You ride your skateboard around the perimeter of the park. How far do you ride your skateboard?





Bernese mountain dog:
103.33 lb

12. A German shepherd weighs 24.75 pounds less than the Bernese mountain dog. A husky weighs 21.67 pounds less than the German shepherd. How much does the husky weigh?

13. DIG DEEPER! Your friend launches a water balloon 136.33 yards. Your cousin launches a balloon 15.67 yards farther than your friend and 8.33 yards farther than you. How much farther do you launch a balloon than your friend ?

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Name _____

Homework & Practice 3.5

Learning Target: Use addition and subtraction to evaluate expressions involving decimals.

Example Find $35.97 - 26.1 + 4.08$.

Estimate $36 - 26 + 4 = 14$

Use order of operations.

Step 1: Subtract: $35.97 - 26.1$.

$$\begin{array}{r} {\scriptstyle 2\ 15} \\ 3\not{5}.\not{9}7 \\ -\ 26.10 \\ \hline 09.87 \end{array}$$

Step 2: Add: $9.87 + 4.08$.

$$\begin{array}{r} {\scriptstyle 1} \\ 9.87 \\ +\ 4.08 \\ \hline 13.95 \end{array}$$

So, $35.97 - 26.1 + 4.08 =$ 13.95 .

Reasonable? 13.95 is close to 14 . ✓

Evaluate. Check whether your answer is reasonable.

1. $2.8 + 7 + 5.3 =$ _____

2. $14.86 + 5.72 - 3 =$ _____

3. $28.95 - 4.12 - 0.7 =$ _____

4. $10.6 - 10.35 + 34.27 =$ _____

5. $19.36 + 24 + 8.5 =$ _____

6. $5 - 0.2 - 1.37 =$ _____

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7. Which One Doesn't Belong? Which addition problem does *not* involve adding zeros to line up the place values?

$5.39 + 1.76 + 40.9$ $25 + 1.8 + 6.3$

$18.5 + 6.2 + 0.7$ $12.49 + 10.8 + 0.13$

8. MP Logic Which expressions have an estimate greater than 10?

$4.9 + 2.5 + 3.8$ $8.1 - 4.3 + 2.7$

$10.9 - 0.2 - 0.1$ $10.8 + 3.6 - 5.2$

9. Modeling Real Life You run across the length of the soccer field until you reach the middle, and then run back. Then you run across the entire length of the field. How far do you run altogether?



10. DIG DEEPER! Three pumpkins are catapulted at a contest. How much farther does Pumpkin C travel than Pumpkin A?

- Pumpkin A travels 0.61 mile.
- Pumpkin B travels 0.28 mile farther than Pumpkin A.
- Pumpkin B travels 0.06 mile farther than Pumpkin C.



Review & Refresh

Determine whether the shape has line symmetry. Draw each line of symmetry.

11.



12.



13.



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Name _____

3.6 Use Mental Math to Add or Subtract Decimals

Learning Target: Use mental math to add or subtract decimals.

Success Criteria:

- I can use addition properties to add decimals.
- I can use compensation to add or subtract decimals.
- I can use place value to add or subtract decimals.

FLORIDA STANDARDS
MAFS.5.NBT.2.7

Explore and Grow

Use mental math to find each sum.

$6.5 + 3.1 + 3.5 =$ _____

$10.79 + 6.25 =$ _____

MP **Reasoning** Explain how you used mental math to find each.

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Think and Grow: Use Mental Math to Add or Subtract Decimals

Example Use mental math to find $12.4 + 3.9 + 7.6$.

Notice that 12.4 and 7.6 are compatible numbers. Use addition properties to rewrite the problem.

$12.4 + 3.9 + 7.6 = 3.9 + 12.4 + 7.6$ Commutative Property

$= 3.9 + (12.4 + 7.6)$ Associative Property

$= 3.9 + 20$

$=$ _____

So, $12.4 + 3.9 + 7.6 =$ _____.

Example Use mental math to find $6.75 - 4.46$.

Use compensation.

$$\begin{array}{r} 6.75 \\ -\ 4.46 \\ +\ 0.04 \end{array} \longrightarrow \begin{array}{r} 6.75 \\ -\ 4.50 \\ \hline 2.25 \end{array}$$

You subtracted 0.04 more than 4.46, so you must add 0.04 to 2.25 to find the answer.

$$\begin{array}{r} 2.25 \\ +\ 0.04 \\ \hline \square \end{array}$$

So, $6.75 - 4.46 =$ _____.

Show and Grow

Use mental math to find the sum or difference.

1. $4.25 + 1.36 + 2.75 =$ _____

2. $12.78 + 5.25 =$ _____

3. $17.4 - 13.6 =$ _____

4. $29.8 - 2.27 =$ _____

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Name _____

Apply and Grow: Practice

Use mental math to find the sum or difference.

5. $1.25 + 2.45 + 1.75 =$ _____

6. $8.4 + 6.15 + 2.6 =$ _____

7. $17.82 - 15.61 =$ _____

8. $35.7 - 13.8 =$ _____

9. Two years ago, your friend was 1.25 meters tall. Today, your friend is 1.48 meters tall. How many meters did your friend grow?

10. Clothing items are donated to an organization. How many pounds of clothing are donated altogether?

Clothing Item	Donations (pounds)
Shirts	37.4
Pants	54.8
Coats	42.6

11. MP **Reasoning** Can you use the Commutative Property to find the difference of two decimals? Explain.

12. DIG DEEPER! Use each digit from 1 through 8 once to complete the problem.

$$\begin{array}{r} \square\square.\square\square \\ +\ \square\square.\square\square \\ \hline 1\ 0\ 1\ .\ 5\ 2 \end{array}$$

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Think and Grow: Modeling Real Life



Example A city receives 75.5 inches of snowfall and 45.27 inches of rainfall in 1 year. How much more snowfall does the city receive than rainfall?

Use compensation to find the difference between the amounts of snowfall and rainfall: $75.5 - 45.27$.

$$\begin{array}{r} 75.50 \\ -\ 45.27 \\ \hline \end{array} - 0.02 \quad \longrightarrow \quad \begin{array}{r} 75.50 \\ -\ 45.25 \\ \hline 30.25 \end{array}$$

You subtracted 0.02 less than 45.27, so you must subtract 0.02 from 30.25 to find the answer.

$$\begin{array}{r} 30.25 \\ -\ 0.02 \\ \hline \square \end{array}$$

So, the city receives _____ inches more snowfall than rainfall.

Show and Grow



13. On average, a left-handed professional baseball player runs from home plate to first base in 4.2 seconds. The record is 3.1 seconds. How much faster is the record than the average time?

14. **DIG DEEPER!** The distances of each part of a triathlon are shown in the table. What is the total distance? How many more miles are traveled on land than in water?

Component	Distance (miles)
Swim	0.93
Bike	24.8
Run	6.2

15. **DIG DEEPER!** You paint a meter stick for a craft. You paint 30.7 centimeters blue and 67.9 centimeters green. How many *millimeters* are not painted?

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Name _____

Homework & Practice 3.6

Learning Target: Use mental math to add or subtract decimals.

Example Use mental math to find 16.5 + 7.8 + 3.5.

Notice that 16.5 and 3.5 are compatible numbers. Use addition properties to rewrite the problem.

$16.5 + 7.8 + 3.5 = 7.8 + 16.5 + 3.5$

$= 7.8 + (16.5 + 3.5)$

$= 7.8 + 20$

$= 27.8$

So, $16.5 + 7.8 + 3.5 =$ 27.8 .

Example Use mental math to find 8.47 − 5.03.

Use compensation.

$8.47 - 5.03 - 0.03 \rightarrow 8.47 - 5.00$

$8.47 - 5.00 = 3.47$

You subtracted 0.03 less than 5.03, so you must subtract 0.03 from 3.47 to find the answer.

$3.47 - 0.03 = \boxed{3.44}$

So, $8.47 - 5.03 =$ 3.44

Use mental math to find the sum or difference.

1. $2.73 + 2.14 =$ _____

2. $54.3 + 14.1 =$ _____

3. $19.86 - 7.2 =$ _____

4. $41.19 - 0.58 =$ _____

5. $6.5 + 2.32 + 1.5 =$ _____

6. $2.25 - 1.15 =$ _____

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7. **YOU BE THE TEACHER** Your friend finds 23.74 − 13.18. Is your friend correct? Explain.

$$\begin{array}{r} 23.74 \\ -\ 13.18 \\ \hline \end{array} + 0.02 \quad \longrightarrow \quad \begin{array}{r} 23.74 \\ -\ 13.20 \\ \hline 10.54 \end{array}$$

$10.54 + 0.02 = 10.56$

So, $23.74 - 13.18 = 10.56$.

8. **Writing** Describe a situation when you would use the Commutative Property to add decimals using mental math.

9. **DIG DEEPER!** Use mental math to find the missing number.

$$n + 14.8 = 20$$

10. **Modeling Real Life** How much wider is the wingspan of the albatross than the length of an 8.89-foot-long alligator?



Albatross
wingspan: 10.95 ft

11. **Modeling Real Life** Your friend buys 3.5 meters of blue ribbon, 2.25 meters of red ribbon, and 3.75 meters of white ribbon. How much ribbon does she buy in all?

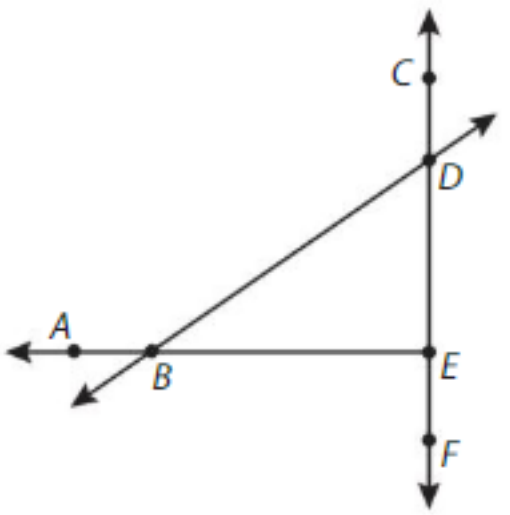
Review & Refresh

Use the figure.

12. Name a line segment.

13. Name two different rays.

14. Name two different lines.



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Problem Solving: Money 3.7

Learning Target: Solve multi-step word problems involving money.

Success Criteria:

- I can understand a problem.
- I can make a plan to solve.
- I can solve a problem.

FLORIDA STANDARDS
MAFS.5.NBT.2.7

Explore and Grow

Use addition or subtraction to make several conclusions about the prices of the items in the table.

Item	Cost
Video game	$54.93
Selfie stick	$15.08
Power bank	$27.36
Speaker	$83.40

MP **Precision** Switch papers with your partner. Check your partner's work for reasonableness.

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Think and Grow: Problem Solving: Money

Example You have $11.83. You earn $13.75 more doing chores. Then you buy headphones for $12.39. How much money do you have left?

Understand the Problem

What do you know?

- You have $11.83.
- You earn $13.75 more.
- You buy headphones for $12.39.

What do you need to find?

- You need to find how much money you have left.

Make a Plan

How will you solve?

Write and solve an equation to find the amount of money you have left.

Solve

Amount of money you have left	=	Amount of money you start with	+	Amount of money you earn	−	Cost of headphones

Let s represent the amount of money you have left.

$s = 11.83 + 13.75 - 12.39$

$= \_\_\_\_\_ - 12.39$

$= \_\_\_\_\_$

You have $_____ left.

Show and Grow

1. You have $32.63. You earn $28.42 more washing windows. Then you buy a video game for $35.95. How much money do you have left?



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Name _____

Apply and Grow: Practice

Understand the problem. What do you know? What do you need to find? Explain.

2. You buy 3 cell phone games that cost $5 each and an in-game purchase for $1.69. How much money do you spend?

3. Newton buys a movie ticket that costs $4.50, a drink that costs $2.25, and a bag of popcorn that costs $4.75. How much money does Newton spend?



Understand the problem. Then make a plan. How will you solve? Explain.

4. Your friend buys a remote control car for $17.89 and some batteries for $5.49. He gives the cashier $25. How much change does he receive?

5. Your cousin has $156.34 in his bank account. He withdraws $15.50 one day and $6.75 the next day. How much money is in his bank account now?

6. Adult admission to open skate night costs $5.75. Admission for children under 13 costs $1.50 less than adult admission. What is the total admission cost for two 12-year-olds?



7. Descartes buys a book for $14.99 and a bookmark. He pays with a $20 bill and receives $3.96 in change. How much does the bookmark cost?

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Think and Grow: Modeling Real Life

Example You pay for colored pencils, a coloring book, and a pencil sharpener with two $20 bills. Your change is $17.42. How much does the pencil sharpener cost?



Think: What do you know? What do you need to find? How will you solve?

Write and solve an equation to find the cost of the pencil sharpener.

Cost of pencil sharpener	=	Amount of money you pay with	− (	Cost of colored pencils	+	Cost of coloring book	) −	Amount of change

Let c represent the cost of the pencil sharpener.

$c = 40 - (8.99 + 5.99) - 17.42$

$= 40 - \_\_\_\_\_ - 17.42$

$= \_\_\_\_\_ - 17.42$

$= \_\_\_\_\_$

The pencil sharpener costs $_____.

Show and Grow

8. Newton pays for a new collar, a bag of dog food, and a box of bones with four $5 bills. His change is $4.02. How much does the box of bones cost?





9. **DIG DEEPER!** Your friend buys the scooter and the helmet. Your friend has two gift cards that are worth the same amount. Your friend uses both gift cards and pays an additional $2.49. What is the amount on each gift card?

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Homework & Practice 3.7

Learning Target: Solve multi-step word problems involving money.

Example Newton has $12.37. Descartes has $14.98. How much more money do they need to buy the bouncy ball kit?



Think: What do you know?
What do you need to find?
How will you solve?

Money needed	=	Cost of kit	− (	Newton's money	+	Descartes's money	)

Let c represent the amount of money Newton and Descartes need.

$c = 27.48 - (12.37 + 14.98)$

$= 27.48 - 27.35$

$= 0.13$ They need $ 0.13 more to buy the bouncy ball kit.

Understand the problem. What do you know? What do you need to find? Explain.

1. A musician buys an electronic keyboard for $89.94 and 2 books of sheet music for $7.99 each. How much does she spend in all?

2. You have $28.49. You spend $14.95 at a bowling alley. You win $35.00 for setting the record score for your age group. How much money do you have now?

Understand the problem. Then make a plan. How will you solve? Explain.

3. Newton wins a $50 gift card to a craft store. He uses the card to buy a scrapbook for $19.99 and a set of markers for $10.75. How much money is left on his gift card?

4. A dancer buys a tutu for $48.75 and the ballet shoes. She gives the cashier $80. How much change does she receive?



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5. A theater director buys props for $116.20 and costumes for $494.85. He has $194.27 left. How much money did he have to start?

6. Descartes uses a metal detector at a beach. He finds 3 quarters, 6 dimes, 2 nickels, and 5 pennies. He drops 1 quarter and 2 pennies into the water. Then he finds 4 more dimes. How much money does Descartes have now?

7. **DIG DEEPER!** Descartes wants to buy a ball launcher for Newton for $12.50. He has one $10 bill, two $5 bills, three $1 bills, and two quarters. Make a table to find four ways Descartes could pay for the ball launcher.

$10 Bills	$5 Bills	$1 Bills	Quarters	Amount Given to Cashier	Change Received





8. **Modeling Real Life** Your science teacher pays for an ultraviolet light, a beaker, and a glowing liquid kit with five $5 bills. The ultraviolet light costs $13.29. The beaker costs $7.99. Your teacher's change is $0.77. What is the cost of the glowing liquid kit?

Review & Refresh

Find the equivalent length.

9. 10 ft = _____ in.

10. 2 mi = _____ ft

11. $\frac{1}{3}$ yd = _____ ft

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Name _____

Performance Task 3

The table shows the average amount of rainfall each month in Mobile, Alabama.

Rainfall in Mobile, Alabama	
Month	**Average Rainfall (inches)**
January	5.67
February	5.12
March	6.14
April	4.80
May	5.16
June	6.10
July	7.24
August	6.97
September	5.12
October	3.70
November	5.12
December	5.08

1. About how many inches of rainfall does the city get during June, July, and August combined?

2. How many more inches of rainfall does the city usually get in July than in October?

3. **a.** Round each rainfall amount to the nearest tenth. About how many inches of rainfall does Mobile get each year?

b. How can you check whether your answer is reasonable?

4. The average yearly amount of rainfall in Seattle, Washington, is about 3 feet.

a. Write an expression to find about how many more inches of rain Mobile, Alabama, usually gets than Seattle each year.



b. Seattle is known for being one of the rainiest cities in the United States, even though it usually gets less rain than Mobile each year. Why do you think Seattle is known as the rainiest city?

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Decimal Dots

Directions:

1. Players take turns connecting two dots, each using a different color.
2. On your turn, connect two dots, vertically or horizontally. If you close a square around an expression, then evaluate the expression. If you do not close a square, your turn is over.
3. Continue playing until all expressions are evaluated.
4. The player with the most evaluated expressions wins!

$27.45 + 6.09$	$70.3 - 5.05 + 29.4$	$93.16 - 48.25$	$8.5 + 16.28 + 31.47$
$86.4 - 19.7 - 42.39$	$32.1 + 6.98 - 15.63$	$39.5 + 18.73$	$58.4 - 7.62$
$64.2 - 12 + 25.63$	$17 - 3.48$	$4.25 + 23.6 + 48.9$	$1.4 + 52$
$14.09 - 9.78$	$76.48 + 9.1$	$95.6 - 34.28 - 27.4$	$28 + 14.36 - 6.95$

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Name _____

Chapter Practice 3

3.1 Estimate Sums and Differences

Estimate the sum or difference.

1.
$$\begin{array}{r} 741.26 \\ +\ 103.75 \\ \hline \end{array}$$

2.
$$\begin{array}{r} 89.5 \\ -\ 41.8 \\ \hline \end{array}$$

3. $13.47 - 9.82$

4. $64.9 + 17.5$

5. MP **Number Sense** Descartes estimates a difference by rounding each number to the nearest whole number. His estimate is 6. Which problems could he have estimated?

$97.5 - 91.8$ $10.3 - 4.6$ $23.7 - 18.1$ $7.2 - 0.8$

3.2 Use Models to Add or Subtract Decimals

Make a quick sketch to find the sum or difference.

6. $0.27 + 0.19 =$ _____

7. $2.52 - 1.36 =$ _____

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3.3 Add Decimals

Find the sum. Check whether your answer is reasonable.

8.
$$\begin{array}{r} 10.36 \\ +\ 0.29 \\ \hline \end{array}$$

9.
$$\begin{array}{r} 461.2 \\ +\ 78.5 \\ \hline \end{array}$$

10. $97.65 + 23.08 =$ _____

11. $63.39 + 4.05 =$ _____

12. **Modeling Real Life** You want to conduct an experiment. You need 0.5 cup of water and the same amount of oil. How many cups of liquid do you need for the experiment?

3.4 Subtract Decimals

Find the difference. Then check your answer.

13.
$$\begin{array}{r} 86.5 \\ -\ 49.4 \\ \hline \end{array}$$

14.
$$\begin{array}{r} 37.82 \\ -\ 5.07 \\ \hline \end{array}$$

15. $582.58 - 33.21 =$ _____

16. $99.2 - 8.6 =$ _____

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3.5 Add and Subtract Decimals

Evaluate. Check whether your answer is reasonable.

17. $9.28 - 5.4 - 2.75 =$ _____

18. $2 + 18.6 - 7.9 =$ _____

19. $26 - 0.8 + 13.1 =$ _____

20. $1.72 + 4 + 35.68 =$ _____

21. **Modeling Real Life** How many inches of snowfall are recorded altogether?

Month	Snowfall (inches)
December	27.5
January	30.75
February	12.25

3.6 Use Mental Math to Add or Subtract Decimals

Use mental math to find the sum or difference.

22. $6.3 + 2.98 + 5.7 =$ _____

23. $9.1 + 4.57 + 8.03 =$ _____

24. $25.7 - 14.9 =$ _____

25. $9.24 - 2.67 =$ _____

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26. **Number Sense** Use mental math to find the missing number.

$$9.2 + n + 2.5 = 15.8$$

3.7 Problem Solving: Money

27. Newton buys a board game for $9.99 and a pack of trading cards for $2.99. He gives the cashier a $20 bill. How much change does he receive?



28. Descartes has $378.97 in his bank account. He withdraws $59.50 one day and then deposits $20.44 the next day. How much money is in his bank account now?

29. **Modeling Real Life** A bowling alley charges $7.50 for each person to bowl and $2.25 to rent a pair of shoes. How much does it cost you and your friend to bowl and rent shoes?

30. **Reasoning** Your friend wants to buy a magic kit for $18.75. He has two $10 bills, one $5 bill, four $1 bills, and 3 quarters. Make a table to find three ways your friend could pay for the magic kit.

$10 Bills	$5 Bills	$1 Bills	Quarters	Amount Given to Cashier	Change Received

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Name _____

Cumulative Practice 1–3

1. Using the order of operations, which operation should you perform last to evaluate the expression?

$$(4 \times 6) + (100 \div 10) - (3 + 4)$$

Ⓐ addition

Ⓑ subtraction

Ⓒ multiplication

Ⓓ division

---

2. Which numbers round to 4 when rounded to the nearest whole number?

☐ 4.03

☐ 4.5

☐ 44.2

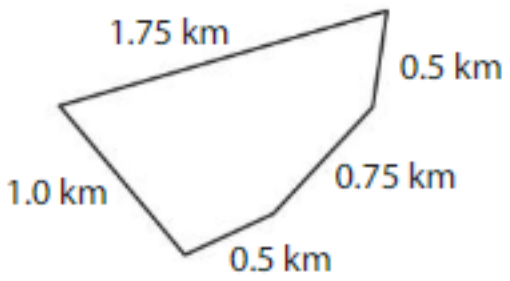
☐ 3.98

☐ 3.46

☐ 4.1

---

3. Which bike trail does the figure show?





Ⓐ River Run

Ⓑ Straight and Fast

Ⓒ Twist and Turn

Ⓓ Wood Way

---

4. What is 0.045 written as a fraction?

Ⓐ $\frac{45}{100}$

Ⓑ $\frac{1,000}{45}$

Ⓒ $\frac{45}{1,000}$

Ⓓ $\frac{450}{1,000}$

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5. A recipe calls for 3 eggs. Newton makes 5 batches of the recipe, and Descartes makes 2 batches of the recipe. Which expressions can you use to determine how many eggs Newton and Descartes use in all?

- ☐ $(5 + 2) \times 3$
- ☐ $(5 \times 3) + (2 \times 3)$
- ☐ $5 + 2 \times 3$
- ☐ $3 + 5 + 2$

---

6. What is the difference of 97.63 and 4.98?



---

7. What is 60.25 written in word form?

- Ⓐ sixty twenty-five
- Ⓑ sixty and twenty-five tenths
- Ⓒ sixty and twenty-five
- Ⓓ sixty and twenty-five hundredths

---

8. Find $55.6 - 3.97$.

- Ⓐ 1.59
- Ⓑ 51.63
- Ⓒ 52.37
- Ⓓ 59.57

---

9. What is the value of the expression?

$$[21 \div (3 + 4)] - 2$$

- Ⓐ 9
- Ⓑ 4 R1
- Ⓒ 1
- Ⓓ 2

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10. Which statement correctly compares the decimals?

Ⓐ $0.1 \stackrel{?}{>} 0.111$

Ⓑ $3.055 \stackrel{?}{>} 3.5$

Ⓒ $0.06 \stackrel{?}{=} 0.6$

Ⓓ $0.44 \stackrel{?}{>} 0.4$

---

11. What is the value of n?

$$n - 9.02 = 3.85$$

Ⓐ 12.87

Ⓑ 5.17

Ⓒ 13.87

Ⓓ 12

---

12. Which property is shown?

$$35 + (15 + 7) = (35 + 15) + 7$$

Ⓐ Associative Property of Addition

Ⓑ Commutative Property

Ⓒ Distributive Property

Ⓓ Associative Property of Multiplication

---

13. Newton estimates a sum by rounding each number to the nearest ten. His estimate is 140. Which problems could he have estimated?

☐ $123.5 + 19.6$

☐ $87.6 + 50.4$

☐ $65.43 + 71.59$

☐ $98.03 + 34.56$

---

14. What is five hundred four thousand, eleven written in standard form?

Ⓐ 54,110

Ⓑ 54,011

Ⓒ 504,110

Ⓓ 504,011

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15. Which expressions have a value of 8?

- ☐ $30 \div (5 \times 2) + 5$
- ☐ $55 - 7 \div 6$
- ☐ $4 \times (5 - 3)$
- ☐ $(16 \div 8) + (3 \times 2)$

16. Descartes wins a $50 gift card to a sporting goods store. He uses the card to buy two baseballs for $1.79 each, a baseball glove for $14.99, and a baseball bat for $12.25. About how much money is left on his gift card?

- Ⓐ $21
- Ⓑ $19
- Ⓒ $31
- Ⓓ $18

17. What is the value of 4×10^5?

- Ⓐ 45
- Ⓑ 400,000
- Ⓒ 40,000
- Ⓓ 200

18. The dimensions of two rectangles are shown.

Think
Solve
Explain



Part A Write an expression to determine how much greater the area of the green rectangle is than the area of the yellow rectangle.

Part B Evaluate the expression.

Part C Explain how you used order of operations to evaluate the expression.

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Name _____

STEAM Performance Task 1–3



Students can buy pencils, notebooks, and other supplies at your school's student store. The table below shows the money in the student store account.

Student Store Account							
Line	**Item**	**Payment**		**Deposit**		**Balance**	
1	Money to start			100	00	100	00
2	Supplies	85	89				
3	Week 1 sales						
4	Week 2 sales						
5	Week 3 sales						
6	The Pencil Warehouse						

1. Line 1 shows how much money was in the account at the start of the school year. Line 2 shows a payment of $85.89 for supplies. Complete the account balance for Line 2.

2. The store has forty-four dollars and thirty cents in sales for the first week and thirty-two dollars and twelve cents in sales for the second week. The sales each week are deposited into the student store account. Fill in the deposits and balances for Lines 3 and 4.

3. The balance after the third week of sales is $115.68. How much money did the store have in sales during the third week? Fill in the deposit and balance for Line 5.

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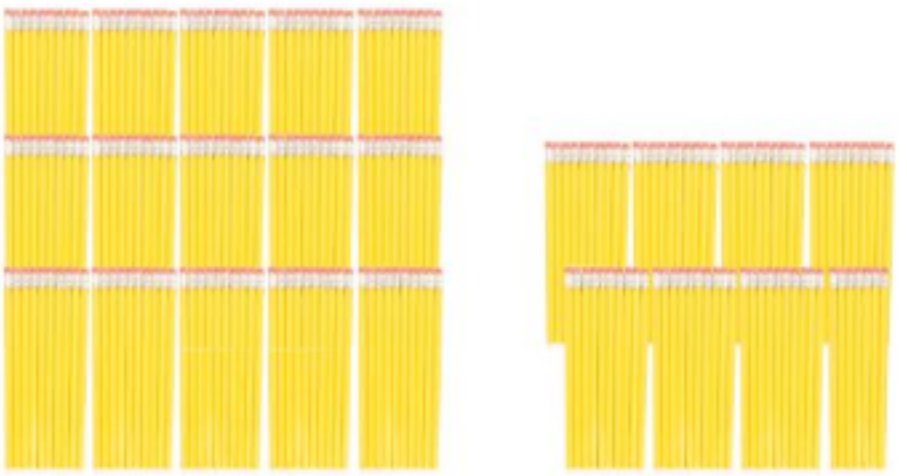
You are in charge of purchasing supplies for the student store. All of the supplies for the student store are purchased and then sold at a higher price so the store can earn a profit.

4. You want to buy 300 more pencils. You find two different quantities to buy.

a. Which pencils will you buy to get the best value? Justify your answer.



Pencil Assortment A
$35.99
150 pencils

Pencil Assortment B
$19.99
75 pencils

b. You pay about $0.24 for each pencil. How much do you think the store should charge for each pencil to earn a profit? Explain.

c. How much profit does the store earn from selling 100 pencils using your recommended price? Explain.

d. You want to buy some notebooks for a total of $25.24 and 300 pencils. You have a $5 coupon. How much do you spend on notebooks and pencils?

e. Write out the check to buy the supplies. What is the account balance now? Fill in the payment and balance for line 6.

Student Store Sept 25th 0003
DATE

PAY TO THE ORDER OF The Pencil Warehouse $

DOLLARS

MEMO Supplies

AUTHORIZED SIGNATURE

⑆123456789⑆ 09 02 ⑆123669456⑈ 0003



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4 Multiply Whole Numbers

- What is the purpose of a dam?
- This dam has generators that harness the energy of flowing water. When you know the amount of energy generated each minute, how can you find the amount of energy generated in 1 day?

Chapter Learning Target:
Understand multiplying whole numbers.

Chapter Success Criteria:
- I can identify a pattern to find a product.
- I can use rounding to estimate a product.
- I can represent a product.
- I can model different types of products with multiplication.

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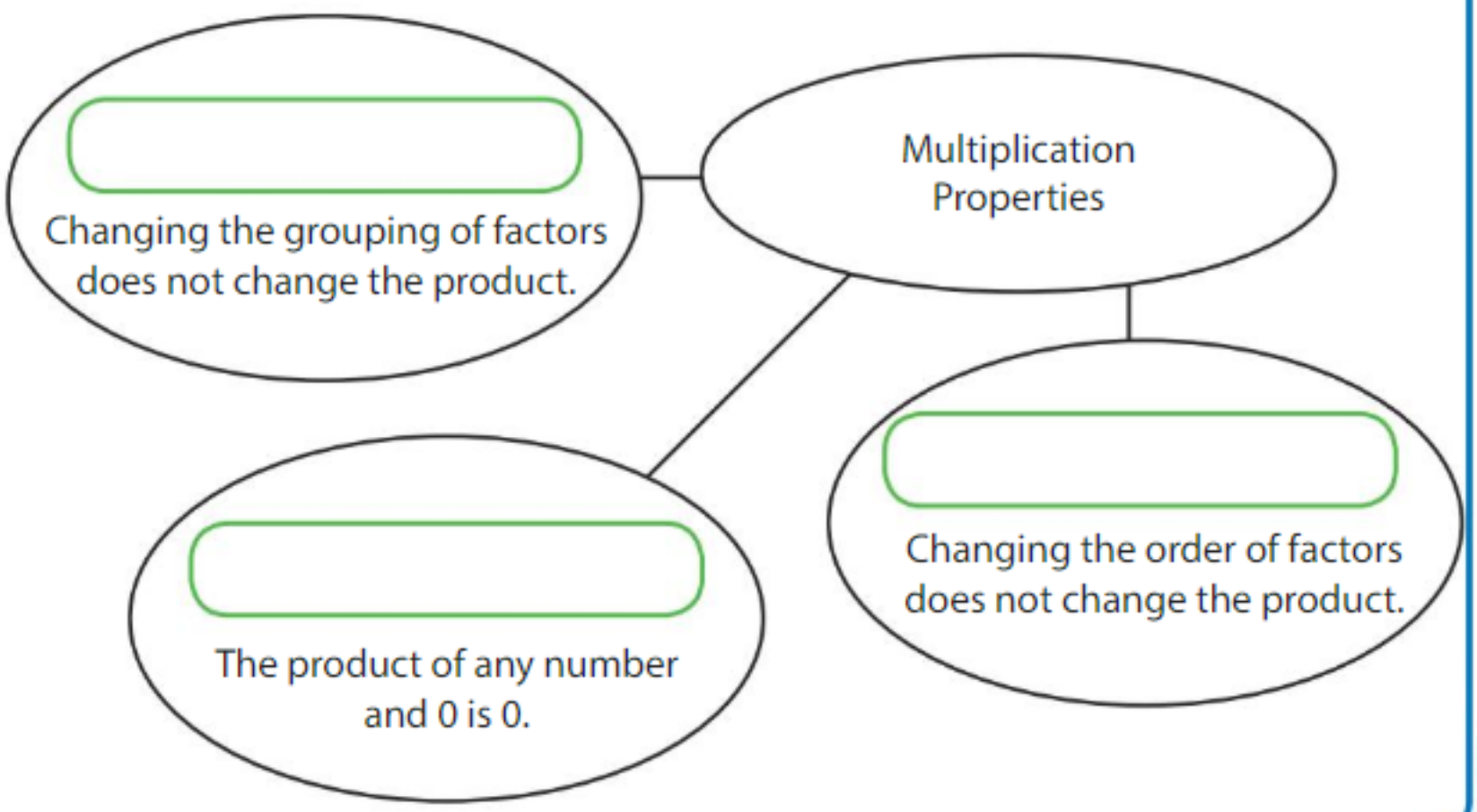
4 Vocabulary

Review Words

Associative Property of Multiplication
Commutative Property of Multiplication
Multiplication Property of Zero

Organize It

Use the review words to complete the graphic organizer.



Define It

Use your vocabulary cards to complete each definition.

1. overestimate: An _____ that is _____ than the actual value

2. underestimate: An estimate that is _____ than the actual _____

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Chapter 4 Vocabulary Cards

overestimate

underestimate

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An estimate that is less than the actual value

12×33

$10 \times 30 = 300$

underestimate

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An estimate that is greater than the actual value

38×14

$40 \times 15 = 600$

overestimate

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Multiplication Patterns 4.1

Learning Target: Find products involving multiples of 10 and powers of 10.

Success Criteria:

- I can explain how to multiply a number by a power of 10.
- I can explain how to find a product involving multiples of 10.

FLORIDA STANDARDS
MAFS.5.NBT.1.2

Explore and Grow

Complete the table. Find the value of each expression.

Power	Expression	Value
8×10^1		
	8×100	
8×10^3		
8×10^4		

What patterns do you notice?

MP **Patterns** Explain how to multiply any number by a power of 10.

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Think and Grow: Use Patterns to Find Products

Example Find 46×10^3.

One Way: Use powers and look for a pattern.

$46 \times 10^1 = 46 \times 10 = 460$

$46 \times 10^2 = 46 \times 100 = 4{,}600$

$46 \times 10^3 = 46 \times 1{,}000 =$ _____

Another Way: Use place value.

$46 \times 10^3 = 46 \times 1{,}000$

$= 46$ thousands

$=$ _____

Remember, every time you multiply a number by 10, the number shifts one position to the left in a place value chart.

So, $46 \times 10^3 =$ _____.

Notice the pattern: In each product, the number of zeros after 46 is the same as the exponent.



Example Find 40×600.

Use a multiplication fact and look for a pattern.

$4 \times 6 = 24$ Multiplication fact

$4 \times 60 =$ $4 \times (6 \times 10) = (4 \times 6) \times 10$ $= 24 \times 10$ $= 240$

$4 \times 600 =$ $4 \times (6 \times 100) = (4 \times 6) \times 100$ $= 24 \times 100$ $= 2{,}400$

$40 \times 600 = (4 \times 10) \times (6 \times 100) = (4 \times 6) \times (10 \times 100) = 24 \times 1{,}000 =$ _____

So, $40 \times 600 =$ _____.

Notice the pattern: In each product, the number of zeros after 24 is equal to the number of zeros in the factors.

Show and Grow

Find the product.

1. $78 \times 10^4 =$ _____

2. $20 \times 400 =$ _____

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Name _____

Apply and Grow: Practice

Find the product.

3. $11 \times 10^3 =$ _____

4. $40 \times 70 =$ _____

5. $300 \times 90 =$ _____

6. $10^4 \times 60 =$ _____

7. $206 \times 10^2 =$ _____

8. $15 \times 200 =$ _____

Find the missing factor.

9. $30 \times$ _____ $= 15{,}000$

10. _____ $\times 10^3 = 54{,}000$

11. $500 \times$ _____ $= 40{,}000$

12. A heart pumps about 2,000 gallons of blood each day. How many gallons of blood does the heart pump in 7 days?

13. MP **Number Sense** Which expressions are equal to 24,000?

240×100 30×800

400×600 $24 \times 1{,}000$

14. MP **Logic** When you multiply any whole number by 100, what do you know about the digits in the product?

15. DIG DEEPER! Show how to find 20×10^3 using the Associative Property of Multiplication.

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Think and Grow: Modeling Real Life

Example A black bear consumes 12,000 calories each day for 30 days. A grizzly bear consumes 400,000 calories in 30 days. Which bear consumes more calories in 30 days?

Multiply 12,000 and 30 to find the number of calories the black bear consumes in 30 days. Use a multiplication fact and a pattern.

$12 \times 3 =$ _____ Multiplication fact

The multiplication fact is $12 \times 3 = 36$. The factors 12,000 and 30 have a total of _____ zeros. So, the product has _____ zeros after 36.

$12{,}000 \times 30 =$ _____

The black bear consumes _____ calories in 30 days.

Compare the numbers of calories the bears consume in 30 days.

The _____ bear consumes more calories in 30 days.

Show and Grow

16. The attendance at a theme park is about 300,000 guests each month. The attendance at a water park is 2,280,000 guests in 1 year. Which park has a greater attendance in 1 year?

17. Your heart beats 120,000 times each day. In 1 week, a professional athlete's heart beats 607,000 times. How many more times does your heart beat in 1 week compared to the athlete?

18. A whale's brain weighs 10^3 times as much as a platypus's brain. The whale's brain weighs 9,000 grams. How many grams does the platypus's brain weigh?



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Name _____

Homework & Practice 4.1

Learning Target: Find products involving multiples of 10 and powers of 10.

Example Find 125×10^3.

Use powers and look for a pattern.

$125 \times 10^1 = 125 \times 10 = 1{,}250$

$125 \times 10^2 = 125 \times 100 = 12{,}500$

$125 \times 10^3 = 125 \times 1{,}000 = 125{,}000$

So, $125 \times 10^3 = 125{,}000$.

Notice the pattern: In each product, the number of zeros after 125 is the same as the exponent.

Find the product.

1. $37 \times 10^4 =$ _____

2. $400 \times 90 =$ _____

3. $100 \times 900 =$ _____

4. $800 \times 700 =$ _____

5. $867 \times 10^3 =$ _____

6. $12 \times 6{,}000 =$ _____

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Find the missing factor.

7. $\_\_\_\_ \times 10^2 = 3{,}000$

8. $\_\_\_\_ \times 500 = 450{,}000$

9. $80 \times \_\_\_\_ = 640{,}000$

10. **Reasoning** Do $50 \times 8{,}000$ and $50 \times 9{,}000$ have the same number of zeros in their products? Explain.

11. **DIG DEEPER!** The product of a number and twice that number is 180,000. Write the multiplication equation.

12. **Modeling Real Life** A hummingbird flutters its wings 80 times in 1 second. A bumblebee flutters its wings 7,800 times in 1 minute. Which animal flutters its wings more times in 1 minute?

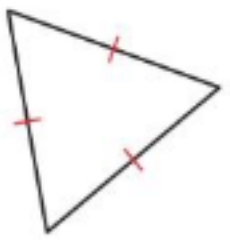


13. **DIG DEEPER!** In 1 day, the blood in your body travels a total of 12,000 miles. This is about 4 times the distance across the United States from coast to coast. About how many miles is the distance across the United States?

Review & Refresh

Classify the triangle by its sides.

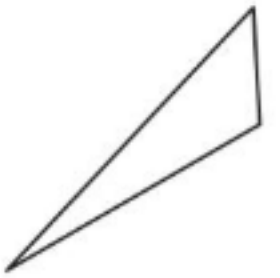
14.



15.



16.



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Name _____

Estimate Products 4.2

Learning Target: Use rounding and compatible numbers to estimate products.

Success Criteria:

- I can use rounding to estimate a product.
- I can use compatible numbers to estimate a product.
- I can explain whether an estimate is an overestimate or an underestimate.

FLORIDA STANDARDS
MAFS.5.NBT.1.2

Explore and Grow

Choose an expression to estimate each product. Write the expression. You may use an expression more than once.

20×20	20×25
30×25	30×30

29×26	21×24	32×26	28×24
____ × ____	____ × ____	____ × ____	____ × ____

Compare your answers with a partner's. Did you choose the same expressions?

MP **Construct Arguments** You estimate the product of 23 and 26 using the expression 25×30. Without multiplying, determine whether the estimate is greater than or less than the actual product. Explain.

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Think and Grow: Estimate Products

An **overestimate** is greater than the actual value, and an **underestimate** is less than the actual value. When you estimate a product, your answer will be an overestimate when both numbers are greater than the original factors. Your answer will be an underestimate when both numbers are less than the original factors.

Example Use rounding to estimate 204×61. Explain whether your estimate is an overestimate or an underestimate.

Round each factor to the nearest ten. Then multiply.

204×61

$\downarrow \quad \downarrow$

200×60

$200 \times 60 = (2 \times 100) \times (6 \times 10)$

$= (2 \times 6) \times (100 \times 10)$

$= 12 \times 1{,}000$

$= \_\_\_\_\_$

So, 204×61 is about _____. This is an _____ because both rounded numbers are _____ _____ the original factors.

Example Use compatible numbers to estimate 23×194. Explain whether your estimate is an overestimate or an underestimate.

Choose compatible numbers. Then multiply.

23×194

$\downarrow \quad \downarrow$

25×200

$25 \times 200 = (25 \times 2) \times 100$

$= 50 \times 100$

$= \_\_\_\_\_$

So, 23×194 is about _____. This is an _____ because both compatible numbers are _____ _____ the original factors.

Show and Grow

Estimate the product. Explain whether your estimate is an overestimate or an underestimate.

1. 387×29

2. 52×913

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Name _____

Apply and Grow: Practice

Estimate the product. Explain whether your estimate is an overestimate or an underestimate.

3. 45×98

4. 21×404

5. 394×285

6. 596×488

7. 194×46

8. 22×221

9. MP **Number Sense** You estimate 27×408 by rounding each number to the nearest ten. Your friend estimates the product using the compatible numbers 25 and 400. Without multiplying, determine which answer is an overestimate and which answer is an underestimate. Explain.

10. **Writing** Explain two different methods to estimate 49×305. Which do you prefer?

11. DIG DEEPER! You estimate 9×26 using the compatible numbers 10 and 25. Is your estimate an overestimate or an underestimate? Explain.

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Think and Grow: Modeling Real Life



Example Earth travels about 1,118 miles in 1 minute. About how far does Earth travel in 1 hour?

Think: What do you know? What do you need to find? How will you solve?

There are 60 minutes in 1 hour, so multiply the distance by 60.

$60 \times 1{,}118 = ?$

Use rounding to estimate the product.

$60 \times 1{,}118$

$60 \times 1{,}000$ $\qquad$ $60 \times 1{,}000 =$ _____

So, Earth travels about _____ miles in 1 hour.



Old Faithful, located in Yellowstone National Park in Wyoming, is the most famous geyser in the world.

Show and Grow

12. Old Faithful erupts about 19 times in 1 day. Each eruption sprays about 6,050 gallons of water. About how many gallons of water does Old Faithful spray in 1 day?



13. Workers place a foam finger on every seat in a stadium for an upcoming football game. There are 29 sections in the stadium and about 245 seats in each section. About how many foam fingers are needed? Is it better to have an overestimate or an underestimate? Explain.

14. DIG DEEPER! One acre of land is equal to the area of a rectangular piece of land that is 22 yards wide and 220 yards long. Central Park in New York City is 843 acres. What is the approximate area of Central Park in square yards?

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Name _____

Homework & Practice 4.2

Learning Target: Use rounding and compatible numbers to estimate products.

Example Use compatible numbers to estimate 368×245. Explain whether your estimate is an overestimate or an underestimate.

Choose compatible numbers. Then multiply.

368×245

400×250

$400 \times 250 = (4 \times 100) \times (25 \times 10)$

$= (4 \times 25) \times (100 \times 10)$

$= 100 \times 1{,}000$

$= 100{,}000$

So, 368×245 is about 100,000. This is an overestimate because both compatible numbers are greater than the original factors.

Use rounding to estimate the product. Explain whether your estimate is an overestimate or an underestimate.

1. 85×96

2. 41×21

Use compatible numbers to estimate the product. Explain whether your estimate is an overestimate or an underestimate.

3. 56×106

4. 23×597

Estimate the product.

5. 203×85

6. 67×405

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7. **Number Sense** Estimate $426 \times 2{,}045$. Is your answer an overestimate or an underestimate? Explain.

8. **Open-Ended** Write 2 three-digit numbers. Then estimate their product by rounding so that the answer is an underestimate.

9. **Reasoning** Without multiplying, determine which estimate is closer to the actual product. Explain.



21×372

$20 \times 400 = 8{,}000$

21×372

$25 \times 400 = 10{,}000$



10. **Modeling Real Life** Your cousin sells jars of jam at a farmers' market. He sells 48 jars in 1 day for $12 each. About how much money does he earn in sales in 1 day?

11. **DIG DEEPER!** A *Supersaurus* weighed 45 tons. About how many more pounds did an *Argentinosaurus* weigh than a *Supersaurus*?



Argentinosaurus:
81 tons

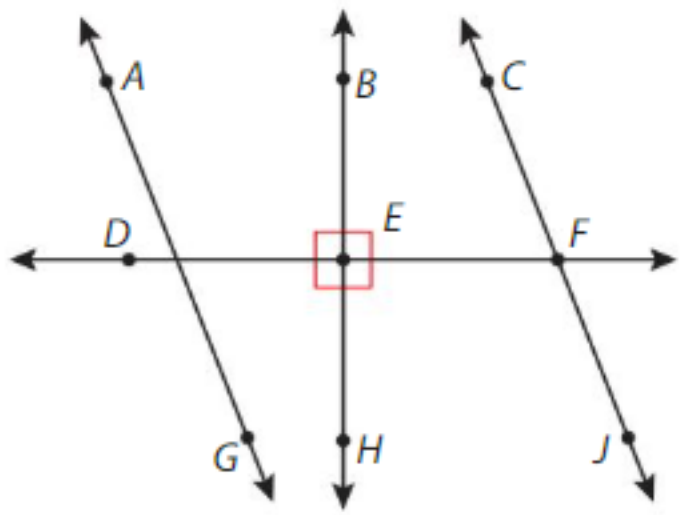
Review & Refresh

Use the figure.

12. Name a pair of lines that appear to be parallel.

13. Name two lines that are perpendicular.

14. Name two intersecting lines.



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Name _____

Multiply by One-Digit Numbers

4.3

Learning Target: Multiply multi-digit numbers by one-digit numbers.

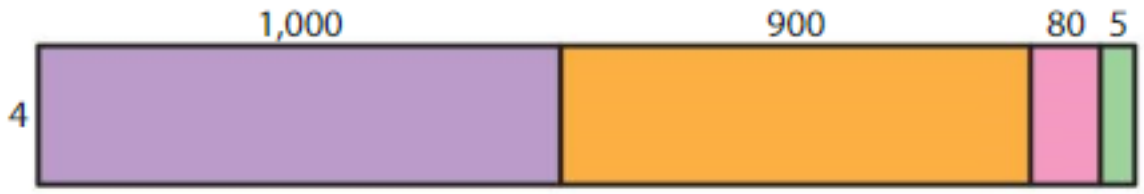
Success Criteria:

- I can multiply to find partial products.
- I can show how to regroup when needed.
- I can add partial products to find a product.

FLORIDA STANDARDS
MAFS.5.NBT.2.5

Explore and Grow

Use the area model and partial products to find 1,985 × 4.



$$\begin{array}{r} 1{,}985 \\ \times \quad 4 \\ \hline \square \\ \square \\ \square \\ \square \\ + \square \\ \hline \square \end{array}$$

Structure Explain how you can use an area model and partial products to find 2,083 × 3.

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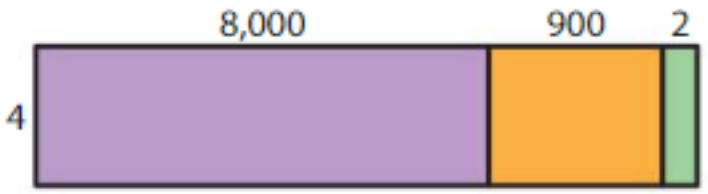
Think and Grow: Multiply by a One-Digit Number

Example Find 8,902 × 4. Estimate _____

Step 1: Multiply the ones.

$$\begin{array}{r} 8{,}902 \\ \times \quad 4 \\ \hline 8 \end{array}$$

- 4 × 2 ones = 8 ones



Step 2: Multiply the tens.

$$\begin{array}{r} 8{,}902 \\ \times \quad 4 \\ \hline 08 \end{array}$$

- 4 × 0 tens = 0 tens

Step 3: Multiply the hundreds. Regroup.

$$\begin{array}{r} {\scriptstyle 3} \\ 8{,}902 \\ \times \quad 4 \\ \hline 608 \end{array}$$

- 4 × 9 hundreds = 36 hundreds
- Regroup 36 hundreds as 3 thousands and 6 hundreds.

Step 4: Multiply the thousands. Add the regrouped thousands.

$$\begin{array}{r} {\scriptstyle 3} \\ 8{,}902 \\ \times \quad 4 \\ \hline 35{,}608 \end{array}$$

- 4 × 8 thousands = 32 thousands
- 32 thousands + 3 thousands = 35 thousands, or 3 ten thousands and 5 thousands

So, 8,902 × 4 = _____. Reasonable? _____ is close to _____. ✓

Show and Grow

Find the product. Check whether your answer is reasonable.

1. $\begin{array}{r} 7{,}346 \\ \times \quad 2 \\ \hline \end{array}$

2. $\begin{array}{r} 12{,}053 \\ \times \quad 3 \\ \hline \end{array}$

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Name _____

Apply and Grow: Practice

Find the product. Check whether your answer is reasonable.

3.
$$\begin{array}{r} 503 \\ \times \quad 5 \\ \hline \end{array}$$

4.
$$\begin{array}{r} 5{,}295 \\ \times \quad 9 \\ \hline \end{array}$$

5.
$$\begin{array}{r} 87{,}294 \\ \times \quad 3 \\ \hline \end{array}$$

6. $399 \times 2 =$ _____

7. $33{,}184 \times 2 =$ _____

8. $60{,}759 \times 4 =$ _____

9. A multiplex has 9 different movie theaters. Each theater has 455 seats. How many seats are in the multiplex?

10. An interstellar object travels 85,700 miles in 1 hour. How far does the object travel in 5 hours?

11. MP **Number Sense** Without multiplying, determine how much greater $4{,}395 \times 7$ is than $4{,}395 \times 6$. Explain.

12. DIG DEEPER! Find the missing digits.

$$\begin{array}{r} \square 3{,}\square 7\square \\ \times \qquad\quad 3 \\ \hline 40{,}716 \end{array}$$

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Think and Grow: Modeling Real Life



A beluga whale can dive 2,123 feet.

Example A Cuvier's beaked whale can dive 1,324 feet deeper than 4 times the depth a beluga whale can dive. How deep can a Cuvier's beaked whale dive?

Write and solve an equation to find the depth.

Diving depth of Cuvier's beaked whale $= \left(4 \times \text{Diving depth of beluga whale}\right) + 1{,}324$

Let d represent the diving depth of a Cuvier's beaked whale.

$d = (4 \times 2{,}123) + 1{,}324$

$= \_\_\_\_\_ + 1{,}324$

$= \_\_\_\_\_$

A Cuvier's beaked whale can dive _____ feet.

Show and Grow



The height of the Gateway Arch in St. Louis is 630 feet.

13. The height of Chicago's Willis Tower is 469 feet more than 2 times the height of the Gateway Arch. How tall is Willis Tower?

14. DIG DEEPER! The Amazon River is 350 miles shorter than 3 times the length of the Colorado River. How much longer is the Amazon River than the Mississippi River?

River	Length (miles)
Colorado	1,450
Mississippi	2,340

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Name _____

Homework & Practice 4.3

Learning Target: Multiply multi-digit numbers by one-digit numbers.

Example Find 451 × 3.

Estimate 500 × 3 = 1,500

Step 1: Multiply the ones.

```
  451
×   3
    3
```

- 3 × 1 one = 3 ones

Step 2: Multiply the tens. Regroup.

```
  1
  451
×   3
   53
```

- 3 × 5 tens = 15 tens
- Regroup 15 tens as 1 hundred and 5 tens.

Step 3: Multiply the hundreds. Add the regrouped hundreds.

```
  1
  451
×   3
 1,353
```

- 3 × 4 hundreds = 12 hundreds
- 12 hundreds + 1 hundred = 13 hundreds, or 1 thousand and 3 hundreds

So, 451 × 3 = 1,353.

Reasonable? 1,353 is close to 1,500. ✓

Find the product. Check whether your answer is reasonable.

1. 814 × 2

2. 206 × 4

3. 2,425 × 6

4. 5,149 × 9

5. 17,823 × 3

6. 61,837 × 8

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Find the product. Check whether your answer is reasonable.

7. $4{,}257 \times 5 =$ _____

8. $6{,}702 \times 6 =$ _____

9. $28{,}956 \times 7 =$ _____

10. A parking garage has 8 levels. There are 194 parking spots on each level. How many parking spots does the garage have?

11. **YOU BE THE TEACHER** Newton finds $16{,}041 \times 8$. Is Newton correct? Explain.

$$\begin{array}{r} {\scriptstyle 4\ \ 3} \\ 16{,}041 \\ \times \quad\ 8 \\ \hline 128{,}328 \end{array}$$

12. **DIG DEEPER!** Write a different multiplication problem that has the same product as 726×5.

13. **Modeling Real Life** The land area of Florida is 8,056 square miles more than 5 times the land area of Vermont. What is the land area of Florida?



The land area of Vermont is 9,216 square miles.

14. **DIG DEEPER!** A solar farm has 6 rectangular arrays of solar panels. Each array has 105 rows with 8 panels in each row. How many solar panels are on the solar farm?

Review & Refresh

Multiply.

15. $2 \times \frac{1}{4}$

16. $3 \times \frac{2}{6}$

17. $1 \times \frac{7}{10}$

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Name _____

Multiply by Two-Digit Numbers

4.4

Learning Target: Multiply multi-digit numbers by two-digit numbers.

Success Criteria:

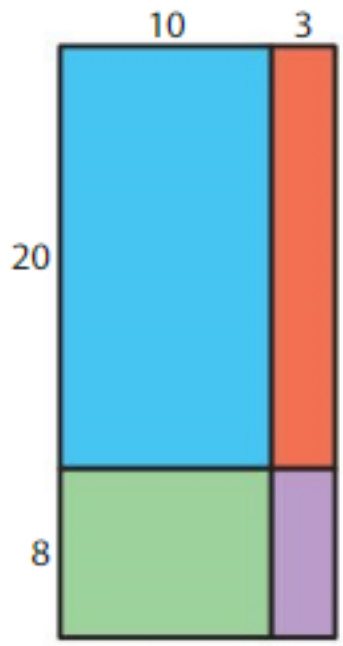
- I can multiply to find partial products.
- I can show how to regroup when needed.
- I can add partial products to find a product.

FLORIDA STANDARDS
MAFS.5.NBT.2.5

Explore and Grow

Use the area model and partial products to find 28 × 13.

$$\begin{array}{r} 28 \\ \times\ 13 \\ \hline \square \\ \square \\ +\ \square \\ \hline \square \end{array}$$



MP **Repeated Reasoning** Explain how you can use an area model and partial products to find 128 × 13.

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Think and Grow: Multiply by a Two-Digit Number

Example Find 312 × 82. Estimate _____

Step 1: Multiply 312 by 2 ones, or 2. Regroup as necessary.

$$\begin{array}{r} 312 \\ \times\ 82 \\ \hline 624 \end{array} \longleftarrow 2 \text{ ones} \times 312 = 624 \text{ ones}$$

Step 2: Multiply 312 by 8 tens, or 80. Regroup as necessary.

$$\begin{array}{r} {\scriptstyle 1} \\ 312 \\ \times\ 82 \\ \hline 624 \\ 24{,}960 \end{array} \longleftarrow 8 \text{ tens} \times 312 = 2{,}496 \text{ tens} = 24{,}960 \text{ ones}$$

Step 3: Add the partial products.

$$\begin{array}{r} {\scriptstyle 1} \\ 312 \\ \times\ 82 \\ \hline 624 \\ +\ 24{,}960 \\ \hline \square \end{array}$$

Make sure the partial products are aligned in the correct place values.



So, 312 × 82 = _____.

Reasonable? _____ is close to _____. ✓

Show and Grow

Find the product. Check whether your answer is reasonable.

1. $\begin{array}{r} 184 \\ \times\ 23 \\ \hline \end{array}$

2. $\begin{array}{r} 817 \\ \times\ 49 \\ \hline \end{array}$

3. $\begin{array}{r} 5{,}046 \\ \times\ 91 \\ \hline \end{array}$

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Name _____

Apply and Grow: Practice

Find the product. Check whether your answer is reasonable.

4.
$$\begin{array}{r} 96 \\ \times\ 24 \\ \hline \end{array}$$

5.
$$\begin{array}{r} 108 \\ \times\ 19 \\ \hline \end{array}$$

6.
$$\begin{array}{r} 6{,}420 \\ \times\ 75 \\ \hline \end{array}$$

7. $802 \times 41 =$ _____

8. $577 \times 86 =$ _____

9. $9{,}513 \times 67 =$ _____

10. Is 6,364 a reasonable product for 706×45? Explain your reasoning.

11. DIG DEEPER! Which two-digit number when multiplied by itself has a product of 625?

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Think and Grow: Modeling Real Life



Example A blood bank receives 58 donors in 1 day. Each person donates 1 pint, or about 473 milliliters of blood. About how many milliliters of blood are donated that day?

Multiply the number of people by the amount of blood each person donates to find the total amount of blood donated.

Multiply 473 and 58.

$$\begin{array}{r} {\scriptstyle 3\,1} \\ {\scriptstyle \not{5}\,\not{8}} \\ 473 \\ \times\ \ 58 \\ \hline 3{,}784 \\ +\,23{,}650 \\ \hline \square \end{array}$$

← 8 ones × 473 = 3,784 ones

← 5 tens × 473 = 2,365 tens = 23,650 ones

So, about _____ milliliters of blood are donated that day.

Show and Grow

12. A store sells 15 drones. How much money does the store collect?



13. What is the area of the soccer field?



14. **DIG DEEPER!** The *Cassini* spacecraft orbited Saturn for 13 years and 77 days. Three of those years were leap years. For how many days did the *Cassini* spacecraft orbit Saturn? Justify your answer.

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Name _____

Homework & Practice 4.4

Learning Target: Multiply multi-digit numbers by two-digit numbers.

Example Find 4,502 × 23. Estimate 4,500 × 20 = 90,000

Step 1: Multiply 4,502 by 3 ones, or 3. Regroup as necessary.

$$\begin{array}{r} {\scriptstyle 1} \\ 4{,}502 \\ \times \quad 23 \\ \hline 13{,}506 \end{array} \leftarrow 3 \text{ ones} \times 4{,}502 = 13{,}506 \text{ ones}$$

Step 2: Multiply 4,502 by 2 tens, or 20. Regroup as necessary.

$$\begin{array}{r} {\scriptstyle 1} \\ 4{,}502 \\ \times \quad 23 \\ \hline 13{,}506 \\ 90{,}040 \end{array} \leftarrow 2 \text{ tens} \times 4{,}502 = 9{,}004 \text{ tens} = 90{,}040 \text{ ones}$$

Step 3: Add the partial products.

$$\begin{array}{r} {\scriptstyle 1} \\ 4{,}502 \\ \times \quad 23 \\ \hline 13{,}506 \\ +\ 90{,}040 \\ \hline \boxed{103{,}546} \end{array}$$

Make sure the partial products are aligned in the correct place values.



So, 4,502 × 23 = 103,546.

Reasonable? 103,546 is close to 90,000. ✓

Find the product. Check whether your answer is reasonable.

1. $\begin{array}{r} 107 \\ \times \quad 11 \end{array}$

2. $\begin{array}{r} 72 \\ \times \quad 13 \end{array}$

3. $\begin{array}{r} 466 \\ \times \quad 27 \end{array}$

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Find the product. Check whether your answer is reasonable.

4.
$$\begin{array}{r} 83 \\ \times\ 57 \\ \hline \end{array}$$

5.
$$\begin{array}{r} 893 \\ \times\ 44 \\ \hline \end{array}$$

6.
$$\begin{array}{r} 2{,}079 \\ \times\ 82 \\ \hline \end{array}$$

7. $6{,}082 \times 25 =$ _____

8. $158 \times 96 =$ _____

9. $98 \times 74 =$ _____

10. **Writing** Why is one partial product always greater than the other partial product when multiplying by a two-digit number?

11. **DIG DEEPER!** Use the numbers 2, 4, 6, and 8 once to form the greatest product.

$$\begin{array}{r} \square\,0\,\square \\ \times\quad \square\square \\ \hline \end{array}$$

12. **Modeling Real Life** A store sells 79 virtual reality headsets. How much money does the store collect?



13. **Modeling Real Life** Your friend needs a trumpet for 12 months. She can rent a trumpet for $42 each month and pay a yearly fee of $25, or she can buy a trumpet for $550. Should she buy or rent the trumpet? Explain.

Review & Refresh

Use a place value chart to answer the question.

14. 4,000 is 10 times as great as what number?

15. 50 is $\frac{1}{10}$ of what number?

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Name _____

Multiply Multi-Digit Whole Numbers

4.5

Learning Target: Multiply multi-digit whole numbers.

Success Criteria:

- I can multiply to find partial products.
- I can show how to regroup when needed.
- I can add partial products to find a product.

FLORIDA STANDARDS
MAFS.5.NBT.2.5

Explore and Grow

Use any strategy to find each product.

425	425	425
× 2	× 12	× 112

MP **Structure** How can you use the first product to find the second product? How can you use the second product to find the third product?

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Think and Grow: Multiply Multi-Digit Whole Numbers

Example Find 2,043 × 132.

Estimate _____

Step 1: Multiply 2,043 by 2 ones, or 2. Regroup as necessary.

$$\begin{array}{r} 2{,}043 \\ \times\ \ 132 \\ \hline \end{array}$$

$2 \times 2{,}043 \longrightarrow 4{,}086$

Step 2: Multiply 2,043 by 3 tens, or 30. Regroup as necessary.

$$\begin{array}{r} {\scriptstyle 1} \\ 2{,}043 \\ \times\ \ 132 \\ \hline 4{,}086 \end{array}$$

$30 \times 2{,}043 \longrightarrow 61{,}290$

Step 3: Multiply 2,043 by 1 hundred, or 100. Regroup as necessary.

$$\begin{array}{r} {\scriptstyle 1} \\ 2{,}043 \\ \times\ \ 132 \\ \hline 4{,}086 \\ 61{,}290 \end{array}$$

$100 \times 2{,}043 \longrightarrow 204{,}300$

Step 4: Add the partial products.

$$\begin{array}{r} {\scriptstyle 1} \\ 2{,}043 \\ \times\ \ 132 \\ \hline 4{,}086 \\ 61{,}290 \\ +\ 204{,}300 \\ \hline \square \end{array}$$

So, 2,043 × 132 = _____.

Reasonable? _____ is close to _____. ✓

Show and Grow

Find the product. Check whether your answer is reasonable.

1. $\begin{array}{r} 318 \\ \times\ 523 \\ \hline \end{array}$

2. $\begin{array}{r} 7{,}291 \\ \times\ \ 308 \\ \hline \end{array}$

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Name _____

Apply and Grow: Practice

Find the product. Check whether your answer is reasonable.

3.
$$\begin{array}{r} 521 \\ \times\ 317 \\ \hline \end{array}$$

4.
$$\begin{array}{r} 631 \\ \times\ 574 \\ \hline \end{array}$$

5.
$$\begin{array}{r} 2{,}496 \\ \times\ 358 \\ \hline \end{array}$$

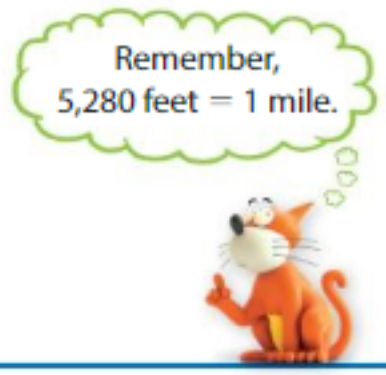
6. $155 \times 956 =$ _____

7. $748 \times 329 =$ _____

8. $1{,}907 \times 218 =$ _____

9. The delta of the Nile River is about 150 miles wide. How many feet wide is the delta?





10. MP **Reasoning** When you multiply a three-digit number by a four-digit number, what is the greatest number of digits the product can have? Explain.

11. DIG DEEPER! Find the missing digit so that both products are the same.

$$\begin{array}{r} 850 \\ \times\ 150 \\ \hline \end{array} \qquad \begin{array}{r} 375 \\ \times\ 34\square \\ \hline \end{array}$$

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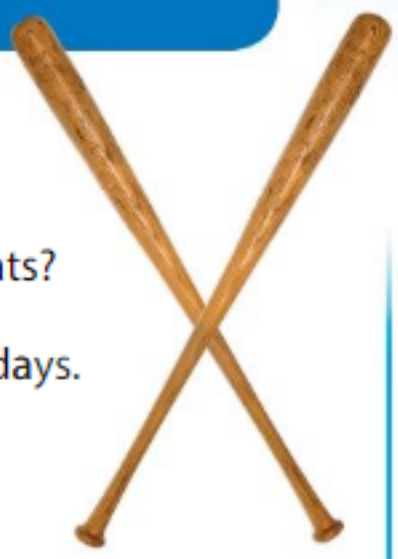
Think and Grow: Modeling Real Life



Example The employees at a baseball bat factory need to make 350,000 bats in 6 months. They make 2,750 bats each day and work 127 days in the 6 months. Do the employees make enough bats?

Multiply the number of bats produced each day by the number of days.

$$\begin{array}{r} 2{,}750 \\ \times \quad 127 \\ \hline \end{array}$$

Compare the number of bats produced to the number of bats needed.

The employees _____ make enough bats.

Show and Grow

12. The drivers at a warehouse need to deliver 40,000 packages each day. The warehouse has 128 trucks. Each truck has 350 packages. The drivers deliver all of the packages on the trucks. Do the warehouse drivers deliver enough packages?

13. A school buys 5 tablets and 5 laptops. Each tablet costs $379. Each laptop costs $449. How much more does the school pay for laptops than it pays for tablets?

14. DIG DEEPER! A koala sleeps 18 hours each day. How many minutes does the koala sleep in 1 year?



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Homework & Practice 4.5

Learning Target: Multiply multi-digit whole numbers.

Example Find 405 × 241.

Estimate 400 × 200 = 80,000

Step 1: Multiply 405 by 1. Regroup as necessary.

$$\begin{array}{r} 405 \\ \times\ 241 \\ \hline 405 \end{array}$$

1 × 405 → 405

Step 2: Multiply 405 by 4 tens, or 40. Regroup as necessary.

$$\begin{array}{r} {\scriptstyle 2} \\ 405 \\ \times\ 241 \\ \hline 405 \end{array}$$

40 × 405 → 16,200

Step 3: Multiply 405 by 2 hundreds, or 200. Regroup as necessary.

$$\begin{array}{r} {\scriptstyle 1} \\ 405 \\ \times\ 241 \\ \hline 405 \\ 16{,}200 \end{array}$$

200 × 405 → 81,000

Step 4: Add the partial products.

$$\begin{array}{r} {\scriptstyle 1} \\ 405 \\ \times\ 241 \\ \hline 405 \\ 16{,}200 \\ +\ 81{,}000 \\ \hline 97{,}605 \end{array}$$

So, 405 × 241 = 97,605.

Reasonable? 97,605 is close to 80,000. ✓

Find the product. Check whether your answer is reasonable.

1.
$$\begin{array}{r} 102 \\ \times\ 104 \\ \hline \end{array}$$

2.
$$\begin{array}{r} 185 \\ \times\ 123 \\ \hline \end{array}$$

3.
$$\begin{array}{r} 3{,}410 \\ \times\ 251 \\ \hline \end{array}$$

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Find the product. Check whether your answer is reasonable.

4. 954 × 176

5. 818 × 524

6. 6,301 × 472

7. $999 \times 186 =$ _____

8. $2{,}445 \times 356 =$ _____

9. $1{,}564 \times 389 =$ _____

10. MP **Reasoning** Your friend says the product of 4,164 and 137 is 70,460. How will finding an estimate help your friend realize the answer is *not* reasonable?

11. **YOU BE THE TEACHER** Your friend says that when multiplying 300 by 126, she can multiply 3 × 126 and write two zeros after the product. Is your friend correct? Explain.

12. **Modeling Real Life** Your friend starts a video channel and wants to have 50,000 subscribers by the end of 1 year. She gets 140 new subscribers each day for 365 days. Does she meet her goal?

Review & Refresh

Evaluate the expression.

13. $(5 + 8) \times 4$

14. $16 + (9 \div 3)$

15. $7 \times (4 + 6)$

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Name _____

Performance Task 4



The Grand Coulee Dam is located on the Columbia River in Washington. The dam is used to control floodwaters, provide irrigation, and generate power.

1. The dam has 12 pumps that each transfer the same amount of water through pipes from Lake Roosevelt to Banks Lake. Together, the pumps can transfer about 12,000 gallons of water each second.

a. About how many gallons of water can each pump transfer in 1 second?

b. About how many gallons of water can each pump transfer in 1 hour? Explain.

2. The dam generates power using 33 generators located in 4 different powerhouses.

a. What is the total capacity of power for the Grand Coulee Dam?

b. Only about one-third of the capacity of power for each powerhouse is actually generated each year. About how many megawatts does the Third Powerhouse actually generate in 1 year?

Capacity of Power at the Grand Coulee Dam

Powerhouse	Number of Generators	Capacity of Power from Each Generator (megawatts)	Total Capacity of the Powerhouse (megawatts)
Left	3	10	
	9	125	
Right	9	125	
	3	805	
Third	3	600	
Pump-generating	4	$53\frac{1}{2}$	
	2	50	

c. There are 10^6 watts in 1 megawatt. Without calculating, how can you find about how many watts the Third Powerhouse actually generates in 1 year?

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Multiplication Adventure

Directions:

1. Players take turns rolling a die. Players solve problems on their boards to race the explorers to their destinations.
2. On your turn, solve the next multiplication problem in the row of your roll.
3. The first player to get an explorer to a destination wins!





300 × 45	803 × 7	4,629 × 37	507 × 749
76 × 90	2,356 × 4	248 × 95	3,816 × 458
58 × 20	5,781 × 5	921 × 68	837 × 249
600 × 94	379 × 9	735 × 84	9,683 × 182
100 × 83	752 × 6	8,206 × 52	4,749 × 295
16 × 70	4,390 × 8	9,573 × 26	864 × 106













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Chapter Practice 4

4.1 Multiplication Patterns

Find the product.

1. $72 \times 10^3 =$ _____

2. $30 \times 900 =$ _____

3. $40 \times 500 =$ _____

4. $60 \times 800 =$ _____

5. $20 \times 90 =$ _____

6. $10^2 \times 41 =$ _____

Find the missing factor.

7. _____ $\times 10^3 = 26{,}000$

8. $600 \times$ _____ $= 24{,}000$

9. $5{,}000 \times$ _____ $= 250{,}000$

10. MP **Logic** The product of a number and twice that number is 320,000. Write the multiplication equation.

4.2 Estimate Products

Estimate the product. Explain whether your estimate is an overestimate or an underestimate.

11. 44×81

12. 29×67

13. 504×302

14. 797×29

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4.3 Multiply by One-Digit Numbers

Find the product. Check whether your answer is reasonable.

15. $\begin{array}{r} 663 \\ \times \quad 5 \\ \hline \end{array}$

16. $\begin{array}{r} 1{,}973 \\ \times \quad 7 \\ \hline \end{array}$

17. $\begin{array}{r} 75{,}028 \\ \times \quad 6 \\ \hline \end{array}$

18. Modeling Real Life The Great Western Trail is 355 miles longer than 4 times the length of the Iditarod Trail. The Iditarod Trail is 1,025 miles long. How long is the Great Western Trail?

4.4 Multiply by Two-Digit Numbers

Find the product. Check whether your answer is reasonable.

19. $\begin{array}{r} 45 \\ \times 35 \\ \hline \end{array}$

20. $\begin{array}{r} 206 \\ \times \quad 74 \\ \hline \end{array}$

21. $\begin{array}{r} 5{,}082 \\ \times \quad 69 \\ \hline \end{array}$

4.5 Multiply Multi-Digit Whole Numbers

Find the product. Check whether your answer is reasonable.

22. $\begin{array}{r} 612 \\ \times 143 \\ \hline \end{array}$

23. $\begin{array}{r} 899 \\ \times 475 \\ \hline \end{array}$

24. $\begin{array}{r} 6{,}182 \\ \times \quad 794 \\ \hline \end{array}$

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5 Multiply Decimals

- Each living organism is made of cells. How many cells do you think your body has?
- You use a microscope to look at an enlarged image of a sample. How can you determine the dimensions of the enlarged image?

Chapter Learning Target:
Understand multiplying decimals.

Chapter Success Criteria:
- I can identify a pattern to determine the location of a decimal.
- I can explain different ways to estimate a decimal.
- I can solve a problem using decimals.
- I can model different types of decimals.



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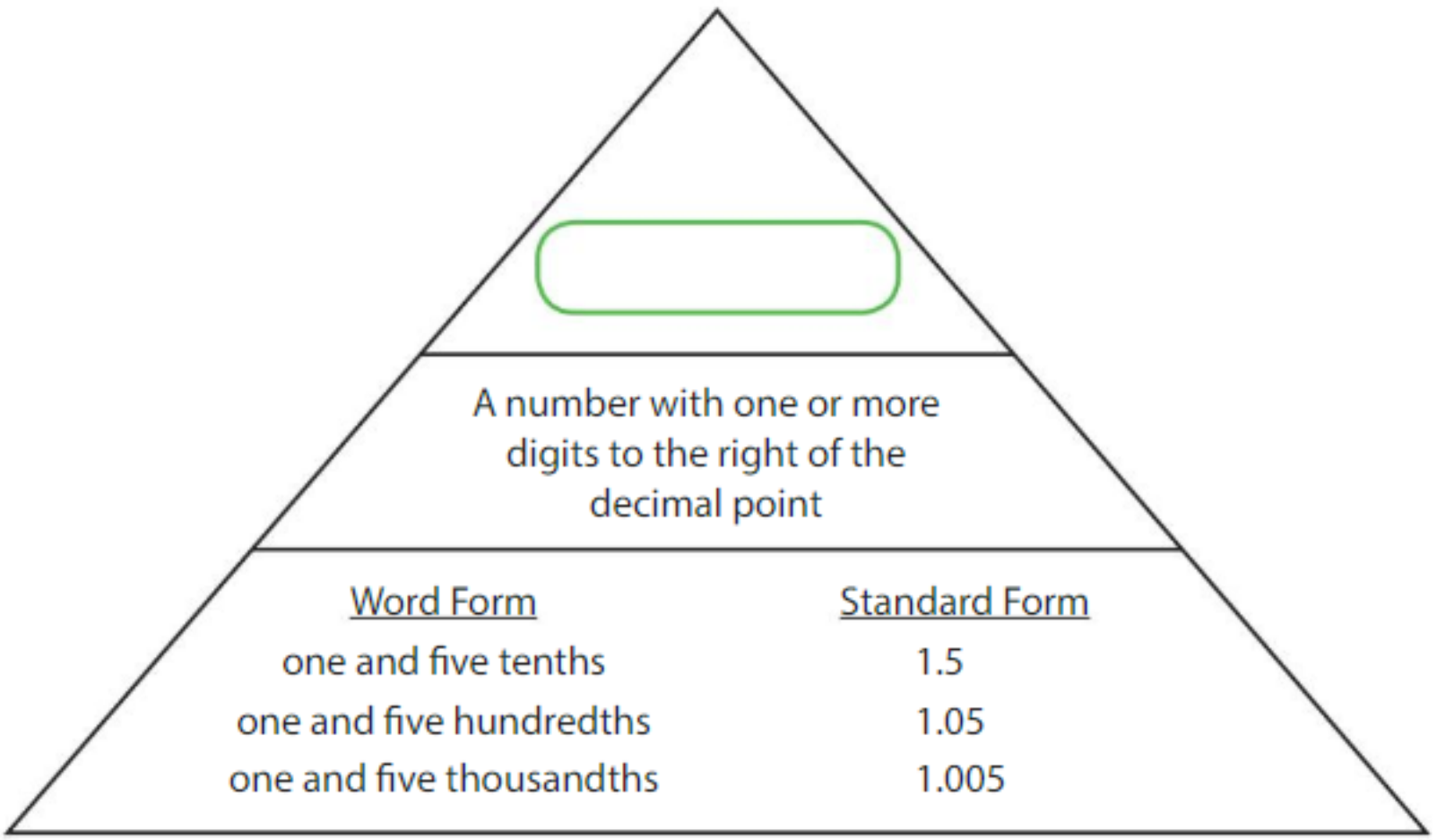
5 Vocabulary

Review Words

base
decimal
exponent
power

Organize It

Use a review word to complete the graphic organizer.



Define It

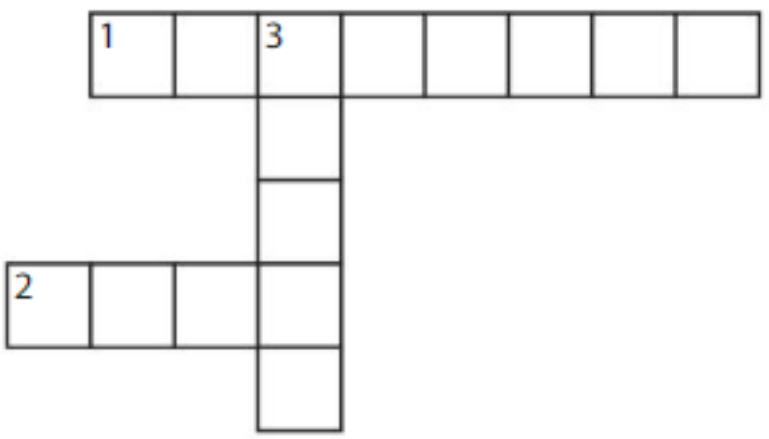
Use the review words to complete the puzzle.

Across

1. The number of times the base is used as a factor
2. The repeated factor in a power

Down

3. A product of repeated factors



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Multiplication Patterns with Decimals

5.1

Learning Target: Find products involving decimals and powers of 10.

Success Criteria:

- I can explain how to multiply a decimal by a power of 10.
- I can explain patterns in the placement of the decimal point when multiplying a decimal by a power of 10.

FLORIDA STANDARDS

MAFS.5.NBT.1.2
MAFS.5.NBT.2.7

Explore and Grow

Use the relationship between positions in a place value chart to find each product.

	Hundreds	Tens	Ones	.	Tenths	Hundredths	Thousandths
2.5×1			2	.	5		
2.5×10							
2.5×100							

	Hundreds	Tens	Ones	.	Tenths	Hundredths	Thousandths
2.5×1			2	.	5		
2.5×0.1							
2.5×0.01							

What patterns do you notice?

MP **Structure** Describe the placement of the decimal point when multiplying a decimal by 10, 100, 0.1, and 0.01.

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Think and Grow: Use Patterns to Find Products

Example Find 0.38×10^3.

Use place value concepts. Every time you multiply a number by 10, each digit in the number shifts one position to the left in a place value chart.

$0.38 \times 1 = 0.38$

$0.38 \times 10^1 = 0.38 \times 10 = 3.8$

$0.38 \times 10^2 = 0.38 \times 100 = 38.$

$0.38 \times 10^3 = 0.38 \times 1{,}000 =$ _____

Hundreds	Tens	Ones	.	Tenths	Hundredths
		0	.	3	8
		3	.	8	
	3	8	.		
3	8	0	.		

So, $0.38 \times 10^3 =$ _____.

Notice the pattern: In each product, the number of places the decimal point moves to the right is the same as the exponent.

Example Find 9.2×0.01.

Use place value concepts. Every time you multiply a number by $\frac{1}{10} = 0.1$, each digit in the number shifts one position to the right in a place value chart.

$9.2 \times 1 = 9.2$

$9.2 \times 0.1 = 0.92$

$9.2 \times 0.01 =$ _____

Ones	.	Tenths	Hundredths	Thousandths
9	.	2		
0	.	9	2	
0	.	0	9	2

So, $9.2 \times 0.01 =$ _____.

Notice the pattern: When you multiply by 0.1, the decimal point moves one place to the left. When you multiply by 0.01, the decimal point moves two places to the left.

Show and Grow

Find the product.

1. $2.51 \times 10^4 =$ _____

2. $0.7 \times 0.01 =$ _____

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Name _____

Apply and Grow: Practice

Find the product.

3. $4.1 \times 10^2 =$ _____

4. $7.03 \times 0.1 =$ _____

5. $16.579 \times 10^4 =$ _____

6. $843.7 \times 0.01 =$ _____

7. A contractor installs a new floor of a room using 1,000 square tiles. Each tile has an area of 1.25 square feet. What is the area of the floor?



Reasoning Complete the equation.

8. $3.14 \times$ _____ $= 0.314$

9. _____ $\times 10^3 = 6{,}209$

10. _____ $\times 0.01 = 1.879$

11. $0.045 \times$ _____ $= 45$

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Think and Grow: Modeling Real Life



Example A flea is 1.5 millimeters long. A magnified image of the flea is 100 times as long as its actual length. How much longer is the flea in the image than its actual length?

Find the length of the flea in the image by multiplying the length of the flea by 100.

Multiplying 1.5 by 100, or 10^2, shifts the digits _____ positions to the left in a place value chart. So, the decimal point moves _____ places to the right.

$1.5 \times 100 = 1.5 \times 10^2 =$ _____

The length of the flea in the image is _____ millimeters.

Subtract the length of the flea from the length of the flea in the image.

$$\begin{array}{r} \square \\ -\ 1.5 \\ \hline \end{array}$$

The flea in the image is _____ millimeters longer than its actual length.

Show and Grow

12. The London Eye is a 443-foot-tall Ferris wheel. A model is 0.01 times as tall as the actual Ferris wheel. How much taller is the actual London Eye than the model?

13. Each day, you ride your bike from home to school and back. Your school is 0.9 mile from home. How far do you ride your bike in 10 days?

14. **DIG DEEPER!** An eel travels at a speed of 2 miles per hour. A starfish travels one hundredth the speed of the eel. A falcon travels 10,000 times as fast as the starfish. How many more miles per hour can the falcon travel than the eel?



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Homework & Practice 5.1

Learning Target: Find products involving decimals and powers of 10.

When multiplying a number by a power of 10, the number of places the decimal point moves to the right is the same as the exponent.



Example Find 3.02×10^4.

$3.02 \times 10^4 = 3.02 \times 10{,}000 =$ 30200.

So, $3.02 \times 10^4 =$ 30,200.

Example Find 0.5×0.1.

$0.5 \times 0.1 =$ .05

So, $0.5 \times 0.1 =$ 0.05 .

When multiplying a number by 0.1, the decimal point moves 1 place to the left. When multiplying a number by 0.01, the decimal point moves 2 places to the left.



Find the product.

1. $5.201 \times 10 =$ _____

2. $26.7 \times 0.01 =$ _____

3. $0.095 \times 10^3 =$ _____

4. $37.84 \times 0.1 =$ _____

5. $0.26 \times 10^4 =$ _____

6. $15.9 \times 0.01 =$ _____

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Find the product.

7. $0.8 \times 0.01 =$ _____

8. $3.1 \times 10^4 =$ _____

9. **Writing** Explain how you can use mental math to find 5.4×10^3 and 5.4×0.01.

10. **DIG DEEPER!** What is Newton's number?





11. **Modeling Real Life** A house cat weighs 9.22 pounds. Hercules the liger is the world's largest cat and weighs 100 times the weight of the house cat. How much more does Hercules weigh than the house cat?

12. **DIG DEEPER!** A *Tyrannosaurus rex* weighed about 1.4 tons more than one tenth the weight of a *Patagotitan mayorum*. About how much did the *Tyrannosaurus rex* weigh?



A Patagotitan mayorum was a type of a titanosaur that weighed about 76 tons.

Review & Refresh

13. Newton and Descartes have a $50.00 gift card to a pet store. Newton's total is $18.95 and Descartes's total is $24.38. How much money do they have left on their gift card?

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Name _____

5.2 Estimate Products of Decimals and Whole Numbers

Learning Target: Use rounding and compatible numbers to estimate products of decimals and whole numbers.

Success Criteria:

- I can use rounding to estimate a product.
- I can use compatible numbers to estimate a product.
- I can explain different ways to estimate a product.

FLORIDA STANDARDS
MAFS.5.NBT.1.4
MAFS.5.NBT.2.7

Explore and Grow

Choose an expression to estimate each product. Write the expression. You may use an expression more than once.

5×23	5×20
5×25	6×20

5.42×23 ____ × ____

5.5×23 ____ × ____

5.6×22 ____ × ____

5.25×20 ____ × ____

Compare your answers with a partner. Did you choose the same expressions?

MP **Construct Arguments** Which estimated product do you think will be closer to the product of 2.7 and 9? Explain your reasoning.

3×9

3×10

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Think and Grow: Estimate Products

Example Estimate 3.85×27.

One Way: Use rounding. Round 3.85 to the nearest whole number. Then multiply.

3.85×27

4×27

$4 \times 27 =$ _____

So, 3.85×27 is about _____.

Another Way: Use compatible numbers.

3.85×27

4×25

$4 \times 25 =$ _____

So, 3.85×27 is about _____.

Example Estimate 77×93.6.

One Way: Use rounding. Round to the nearest ten. Then multiply.

77×93.6

80×90

$80 \times 90 =$ _____

So, 77×93.6 is about _____.

Another Way: Use compatible numbers.

77×93.6

75×100

$75 \times 100 =$ _____

So, 77×93.6 is about _____.

Show and Grow

Estimate the product.

1. 11.6×9

2. 159.81×17

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Name _____

Apply and Grow: Practice

Estimate the product.

3. 72×0.76

4. 6.1×4

5. 1.54×12

6. 22×8.02

7. 147×11.6

8. 217×13.42

9. There are 1.36 liters of pineapple juice in 1 can. You buy a case of 8 cans. About how many liters of pineapple juice do you buy?



10. **Open-Ended** Write a decimal and a whole number that have an estimated product of 16.

_____ × _____

↓ ↓

_____ × _____ = 16

11. MP **Number Sense** You use 50×4 to estimate 45×3.56. Is your estimate an overestimate or an underestimate? Explain.

12. DIG DEEPER! Describe a situation in which an estimate of the product of a whole number and a decimal is sufficient.

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Think and Grow: Modeling Real Life



Example A space probe is 756,600 miles from Earth. The probe travels 9.7 miles farther from Earth each second. About how far is the space probe from Earth after 60 seconds?

Find the distance the probe travels in 60 seconds by multiplying the distance the probe travels in 1 second by 60. Round 9.7 to the nearest whole number because you do not need a precise answer.

9.7×60

$10 \times 60 =$ _____

The probe travels about _____ miles in 60 seconds.

Add the distance the probe is from Earth to the distance it travels in 60 seconds.

$$\begin{array}{r} 756{,}600 \\ +\ \square \\ \hline \end{array}$$

The probe is about _____ miles from Earth after 60 seconds.

Show and Grow

13. A bucket weighs 1.4 pounds. One gallon of sand weighs 13.4 pounds. About how much does the bucket and 4 gallons of sand weigh in all?

14. An 8.2-centimeter-tall plant grows 2.9 centimeters each month for 1 year. About how tall is the plant at the end of 1 year?

15. DIG DEEPER! A motorcycle travels 52.3 miles using 1 gallon of gasoline. A car travels 29.8 miles using 1 gallon of gasoline. About how much farther does the motorcycle travel using 6 gallons of gasoline than the car?

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Name _____

Homework & Practice 5.2

Learning Target: Use rounding and compatible numbers to estimate products of decimals and whole numbers.

Example Estimate 5.2×56.

One Way: Use rounding. Round 5.2 to the nearest whole number. Then multiply.

5.2×56

5×56

$5 \times 56 = 280$

So, 5.2×56 is about 280.

Another Way: Use compatible numbers.

5.2×56

5×50

$5 \times 50 = 250$

So, 5.2×56 is about 250.

Estimate the product.

1. 0.8×36

2. 2.34×16

3. 9×1.67

4. 105×4.6

5. 88×0.9

6. 5.5×131

7. An athlete runs 6.23 miles in 1 hour. At this pace, about how far does the athlete run in 4 hours?

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8. **Number Sense** Which expressions are underestimates of 26.5×91?

20×90 30×100 30×90 25×90

9. **Writing** Which strategy can you use to estimate the product of 8.02 and 106? Explain.

10. **YOU BE THE TEACHER** Your friend finds the product. Is her answer reasonable? Estimate to check.

$$1.06 \times 103 \stackrel{?}{=} 109.18$$

11. **Modeling Real Life** Newton pays for 5 pounds of pears that cost \$3.75 per pound. Descartes pays \$15 for 5 pounds of apples. About how much more do the 5 pounds of pears cost than the 5 pounds of apples?

12. **Modeling Real Life** A hospital employee works 3 days each week. The route from her house to the hospital is 9.9 miles and the route back to her house is 10.5 miles. About how many miles does she travel for work each week?

Review & Refresh

13. Write the number in two other forms.

Standard form:

Word form: four and twenty-six thousandths

Expanded form:

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Name _____

Use Models to Multiply Decimals and Whole Numbers

5.3

Learning Target: Use models to multiply decimals and whole numbers.

Success Criteria:

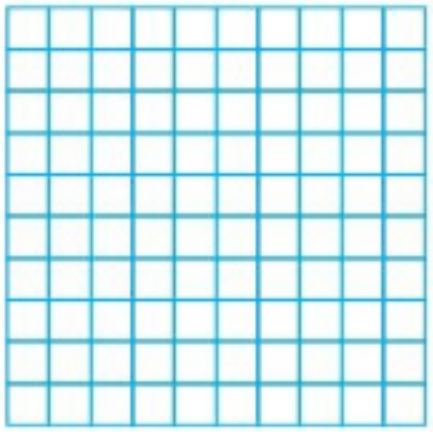
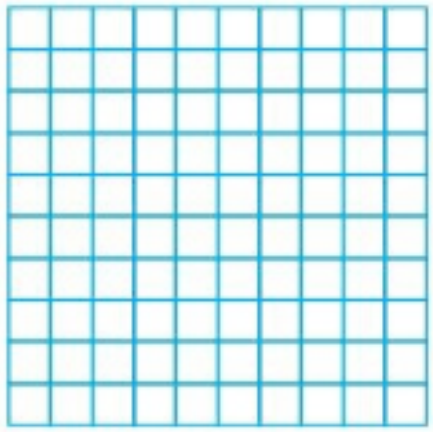
- I can use a model to represent a decimal.
- I can explain the relationship between addition and multiplication.
- I can use a model to find the product of a decimal and a whole number.

FLORIDA STANDARDS

MAFS.5.NBT.2.7

Explore and Grow

Complete the table.

Expression	0.2×4	0.15×3
Model		
Repeated Addition		
Value		

MP **Structure** How does the relationship between addition and multiplication help you find each product?

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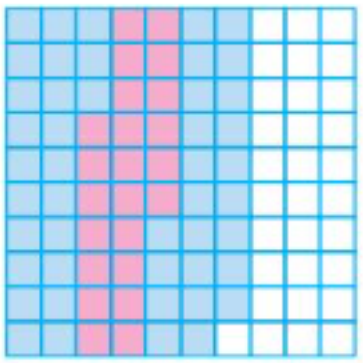
Think and Grow: Use Models to Multiply Decimals and Whole Numbers

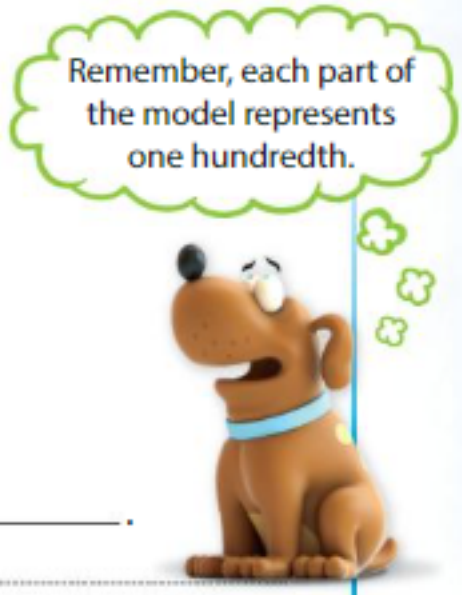
Example Find 0.23×3.

Use a model. Shade 3 groups of 0.23.



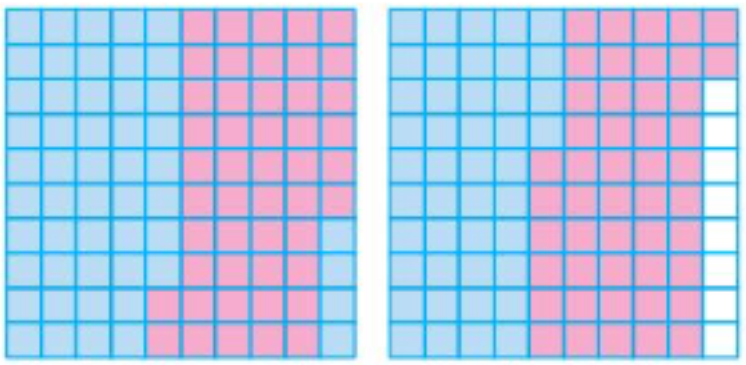
$0.23 + 0.23 + 0.23 =$ _____

So, $0.23 \times 3 =$ _____.



Example Find 0.48×4.

Use a model. Shade 4 groups of 0.48.



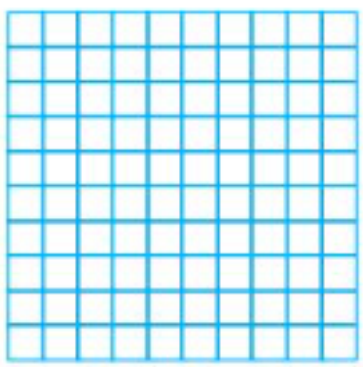
$0.48 + 0.48 + 0.48 + 0.48 =$ _____

So, $0.48 \times 4 =$ _____.

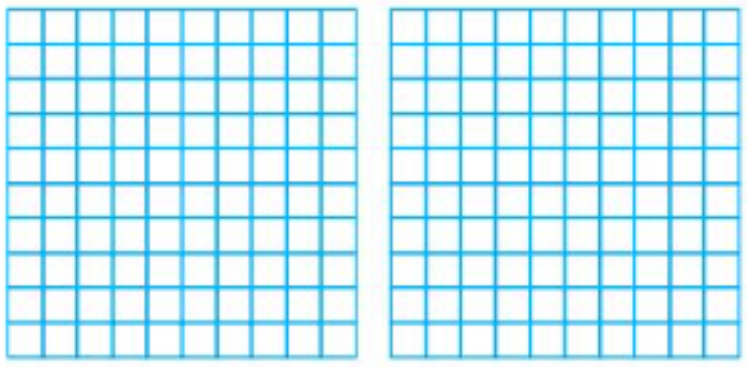
Show and Grow

Find the product.

1. $0.19 \times 3 =$ _____



2. $0.37 \times 5 =$ _____



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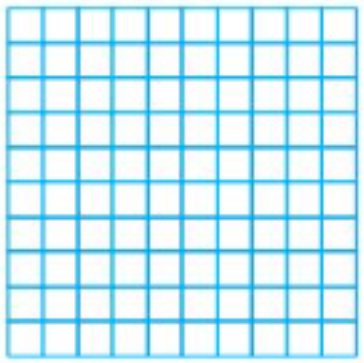
Name _____

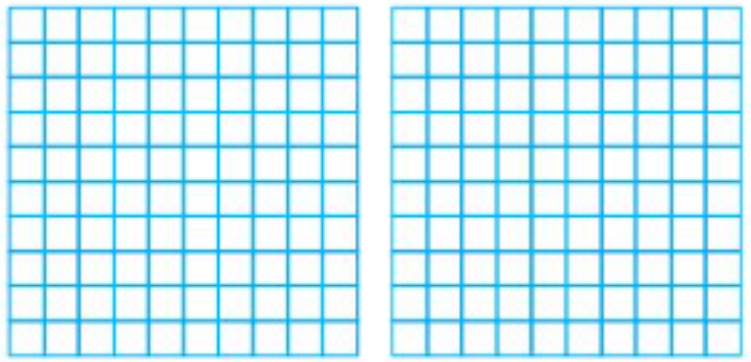
Apply and Grow: Practice

Find the product.

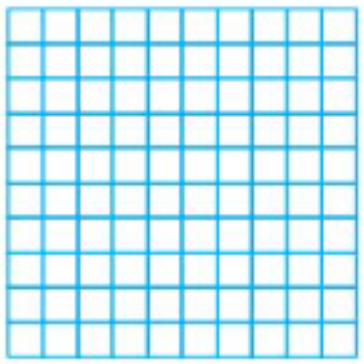
3. $0.09 \times 5 =$ _____



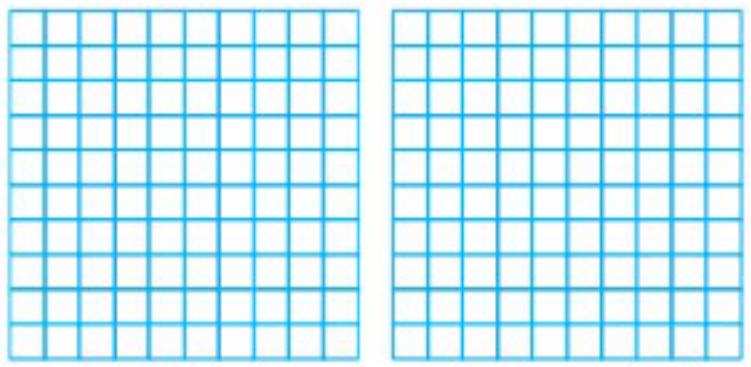
4. $8 \times 0.2 =$ _____



5. $7 \times 0.14 =$ _____



6. $0.96 \times 2 =$ _____

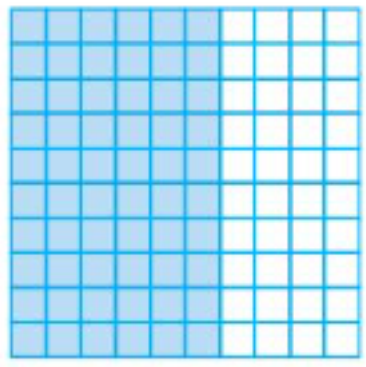




7. A hummingbird's heart beats once every 0.05 second. How long does it take for its heart to beat 7 times?

8. MP **Precision** When multiplying a decimal less than one by a whole number, how does the product compare to the whole number? Is this true when multiplying two whole numbers?

9. DIG DEEPER! Write two multiplication equations involving a decimal and a whole number whose product is shown.



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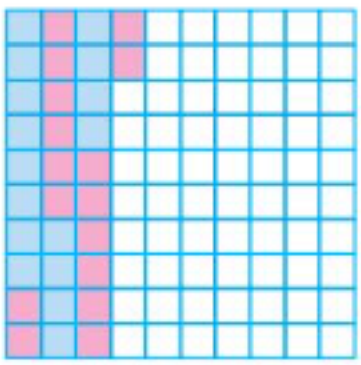
Think and Grow: Modeling Real Life



Example You build the card tower shown. Each row is 0.08 meter tall. Your friend's card tower is 0.3 meter tall. Whose tower is taller?

Because your card tower has 4 rows, multiply 4 by 0.08 to find the height of your tower.

Use a model. Shade 4 groups of 0.08.



$0.08 + 0.08 + 0.08 + 0.08 =$ _____

Compare the height of your tower to the height of your friend's tower.

So, _____ tower is taller.

Show and Grow

10. You have 1 meter of ribbon. Do you have enough ribbon to border the outside of the square picture frame?



11. Organic shaved coconut originally costs $0.34 per ounce. A baker buys 8 ounces on sale for $0.27 per ounce. How much money does the baker save?



12. **DIG DEEPER!** You have 4 pennies, 3 nickels, and 2 quarters. Find the total weight and the total value of your coins.

Coin				
Weight (g)	2.5	5	2.268	5.67

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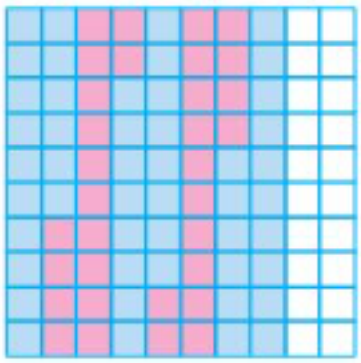
Name _____

Homework & Practice 5.3

Learning Target: Use models to multiply decimals and whole numbers.

Example Find 0.16×5.

Use a model. Shade 5 groups of 0.16.

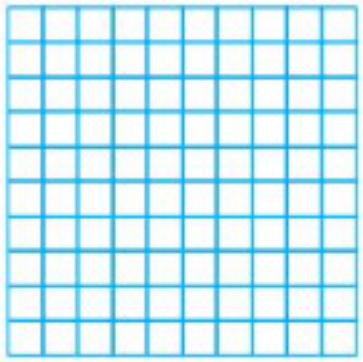


$0.16 + 0.16 + 0.16 + 0.16 + 0.16 =$ 0.80

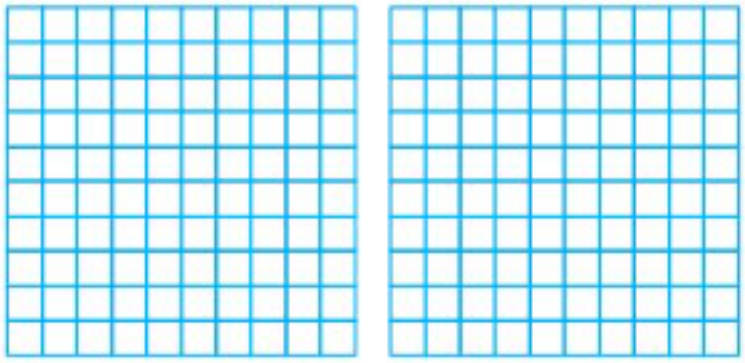
So, $0.16 \times 5 =$ 0.80 .

Find the product.

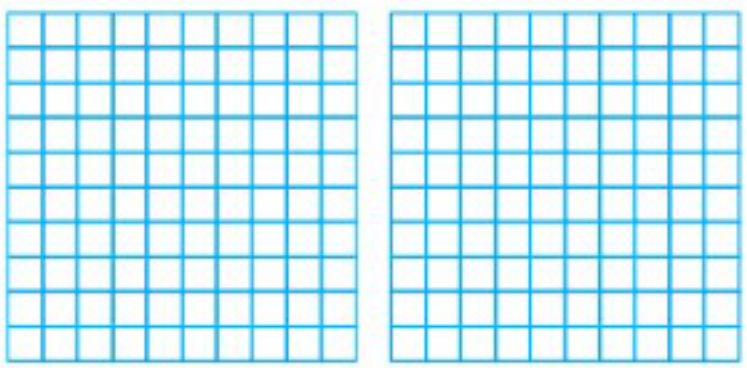
1. $0.4 \times 2 =$ _____



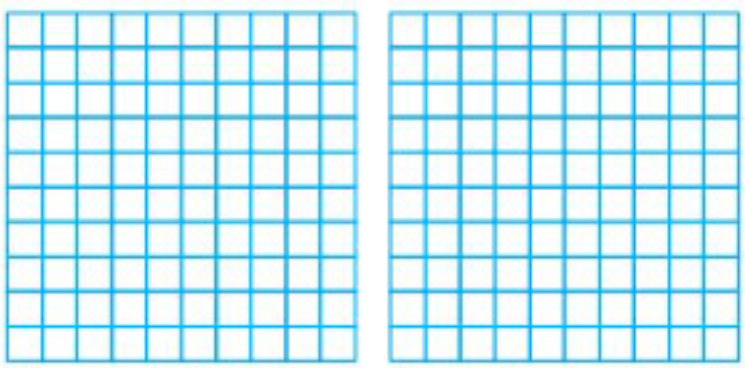
2. $6 \times 0.31 =$ _____



3. $0.54 \times 3 =$ _____



4. $0.25 \times 7 =$ _____



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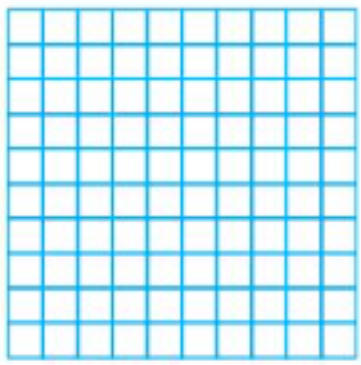
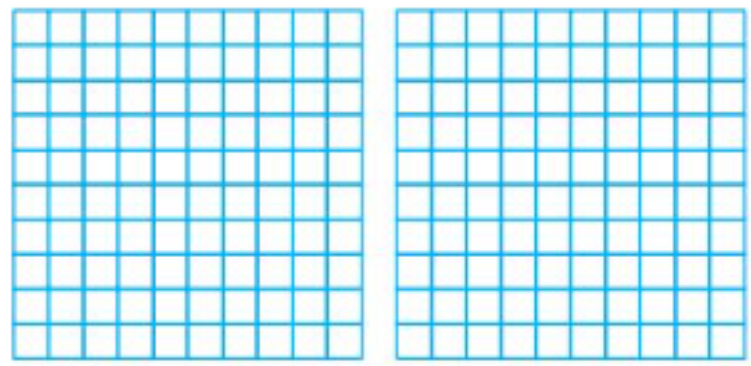
Find the product.

5. $0.22 \times 4 =$ _____

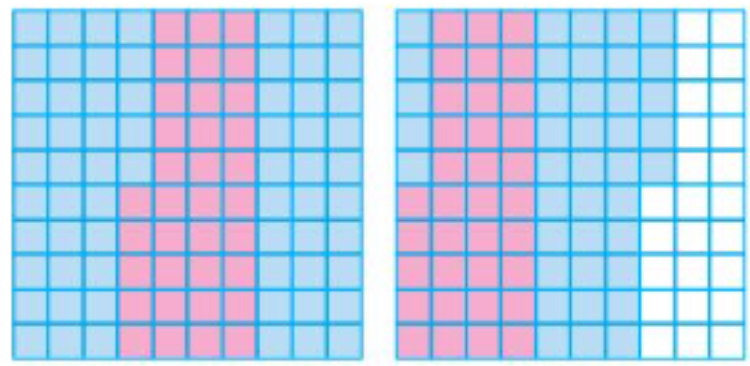


6. $5 \times 0.4 =$ _____



7. A city mayor plans to build two new parks. Each park will cover 1.45 acres. How many acres will the new parks cover altogether? Explain.

8. MP **Structure** Write an equation represented by the model.



9. DIG DEEPER! Find the product of 0.03 and 4. How does the product change when you replace 4 with 0.4? Explain.

10. **Modeling Real Life** In 1 year, you spend \$1.50 on electricity to charge your tablet. In 1 month, you spend \$0.02 on electricity to charge your smartphone. Which device costs more to charge in 1 year?

11. DIG DEEPER! You have a 2-pound carton of blueberries. You eat 0.2 of the carton on Monday and 0.35 of the carton on Tuesday. How many pounds of blueberries are left?

Review & Refresh

Evaluate the expression.

12. $(12 \div 4) \times 30 - 15$

13. $(11 + 7) \div (3 + 5 + 1)$

14. $35 \div [(153 - 139) \div 2]$

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Name _____

5.4 Multiply Decimals and Whole Numbers

Learning Target: Multiply decimals and whole numbers.

Success Criteria:

- I can use place value to multiply.
- I can explain how to place the decimal point in a product.

FLORIDA STANDARDS
MAFS.5.NBT.2.7

Explore and Grow

Complete the table.

Expression	Repeated Addition	Value
4×3		
0.4×3		
0.04×3		

What pattern do you notice in the placement of the decimal point?

MP **Structure** How is multiplying decimals similar to multiplying whole numbers?

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Think and Grow: Multiply a Decimal and a Whole Number

Example Find 5.8×4.

Estimate _____

One Way: Multiply as you do with whole numbers. Then place the decimal point.

Find 58×4.

$$\begin{array}{r} {\scriptstyle 3} \\ 58 \\ \times \quad 4 \\ \hline 232 \end{array}$$

Multiply by 0.1, which moves the decimal point one place to the left.

$232 \times 0.1 = 23.2$

Think: 58×0.1 is 5.8. So, multiply the product by 0.1 to find 5.8×4.



So, $5.8 \times 4 =$ _____.

Reasonable? _____ is close to _____. ✓

Another Way: Use place value and partial products.

Multiply the tenths.

$$\begin{array}{r} 5.8 \\ \times \quad 4 \\ \hline 3.2 \end{array}$$

- 4×8 tenths $=$ 32 tenths, or 3 ones and 2 tenths.

Multiply the ones.

$$\begin{array}{r} 5.8 \\ \times \quad 4 \\ \hline 3.2 \\ 20 \end{array}$$

- 4×5 ones $=$ 20 ones, or 2 tens and 0 ones.

Add the partial products.

$$\begin{array}{r} 5.8 \\ \times \quad 4 \\ \hline 3.2 \\ +\ 20 \\ \hline \end{array}$$

So, $5.8 \times 4 =$ _____.

Show and Grow

Find the product. Check whether your answer is reasonable.

1. $2.4 \times 7 =$ _____

2. $8.15 \times 3 =$ _____

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Name _____

Apply and Grow: Practice

Find the product.

3. $6 \times 5.3 =$ _____

4. $4.68 \times 4 =$ _____

5. $7 \times 0.81 =$ _____

6. $1.45 \times 5 =$ _____

7. $34 \times 7.2 =$ _____

8. $23.66 \times 19 =$ _____

9. How much do you pay for 3 pounds of grapes?



10. **Which One Doesn't Belong?** Which equation is *not* true?

$40 \times 15 \stackrel{?}{=} 600$

$40 \times 1.5 \stackrel{?}{=} 60$

$0.4 \times 15 \stackrel{?}{=} 60$

$40 \times 0.15 \stackrel{?}{=} 6$

11. MP **Number Sense** Without calculating, determine whether the product of 0.67 and 8 is greater than or less than 8. Explain.

12. DIG DEEPER! Find the missing digits. Then find the product.

$$\begin{array}{r} \square.8 \\ \times \quad \square 2 \\ \hline 15.6 \\ +\ 312.0 \\ \hline \square \end{array}$$

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Think and Grow: Modeling Real Life



Example You buy a 40-pack of bottled water. Each bottle contains 16.9 fluid ounces of water. You drink 10 bottles. How many total fluid ounces of water do you have left?

Subtract 10 from the number of bottles you buy to find the number of bottles you have left.

$$40 - 10 = 30$$

To find how much water you have left, multiply the number of bottles you have left by 16.9. Multiply as you do with whole numbers. Then place the decimal point.

$$\begin{array}{r} 169 \\ \times \quad 30 \\ \hline \end{array}$$

Think: $16.9 = 169 \times 0.1$.

_____ $\times$ 0.1 = _____

Multiply the product by 0.1 to find 16.9×30, which moves the decimal point one place to the left.

You have _____ total fluid ounces of water left.

Show and Grow

13. The stories of a residential building are 3.2 meters tall. The stories of an office building are 0.4 meter taller than the stories in the residential building. The office building has 12 stories. How tall is the office building?

14. You have 3 strands of lights that are each 10.8 feet long. You buy 5 strands of lights that are each 16.25 feet long. How many feet of lights do you have in all?

15. DIG DEEPER! You stack $1 in dimes and you stack $1 in quarters. Which stack is taller? How much taller?

Coin	Thickness (millimeters)
Penny	1.52
Nickel	1.95
Dime	1.35
Quarter	1.75

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Name _____

Homework & Practice 5.4

Learning Target: Multiply decimals and whole numbers.

Example Find 6.5×3.

Estimate $7 \times 3 = 21$

Use place value and partial products.

Multiply the tenths.

$$\begin{array}{r} 6.5 \\ \times \quad 3 \\ \hline 1.5 \end{array}$$

- 3×5 tenths = 15 tenths, or 1 one and 5 tenths.

Multiply the ones.

$$\begin{array}{r} 6.5 \\ \times \quad 3 \\ \hline 1.5 \\ 18 \end{array}$$

- 3×6 ones = 18 ones, or 1 ten and 8 ones.

Add the partial products.

$$\begin{array}{r} 6.5 \\ \times \quad 3 \\ \hline 1.5 \\ + \ 18 \\ \hline 19.5 \end{array}$$

So, $6.5 \times 3 =$ 19.5.

Reasonable? 19.5 is close to 21. ✓

Find the product.

1. $9.8 \times 2 =$ _____

2. $0.61 \times 8 =$ _____

3. $82 \times 1.1 =$ _____

4. $43 \times 0.6 =$ _____

5. $2.39 \times 57 =$ _____

6. $10.75 \times 24 =$ _____

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7. There are 6.3 grams of protein in a boiled egg. You eat 3 boiled eggs. How many grams of protein do you consume?

8. **Reasoning** Newton says the product of 7.55 and 8 is 60.40. Descartes says the product is 60.4. Who is correct? Explain.

9. **Patterns** Describe and complete the pattern.

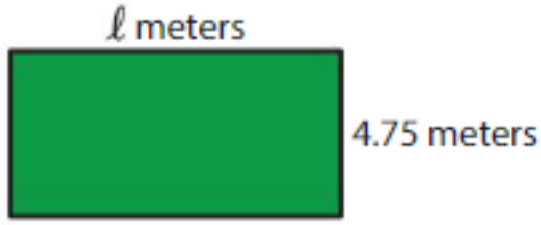
Expression	Product
75×31	2,325
75×3.1	
75×0.31	

10. **YOU BE THE TEACHER** Your friend finds 14×0.82. Is your friend correct? Explain.

$$\begin{array}{r} 14 \\ \times\ 0.82 \\ \hline 28 \\ +\ 1120 \\ \hline 1148 \end{array}$$

11. **Modeling Real Life** A person weighs 2.34 times as much on Jupiter as on Earth. An 85-pound student would weigh 90.1 pounds less on Saturn than on Jupiter. How much would he weigh on Saturn?

12. **DIG DEEPER!** A landscaper digs a rectangular region for a garden. The length is a one-digit whole number of meters. What is the least possible area? What is the greatest possible area?



Review & Refresh

Find the sum or difference.

13. $0.83 - 0.14 =$ _____

14. $1.34 + 1.35 =$ _____

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Name _____

Use Models to Multiply Decimals

5.5

Learning Target: Use models to multiply decimals.

Success Criteria:

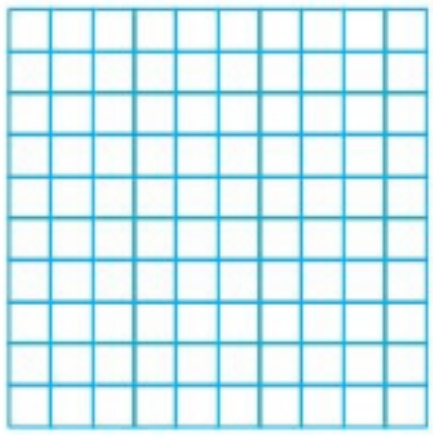
- I can use a model to represent a decimal.
- I can use a model to multiply decimals.

FLORIDA STANDARDS

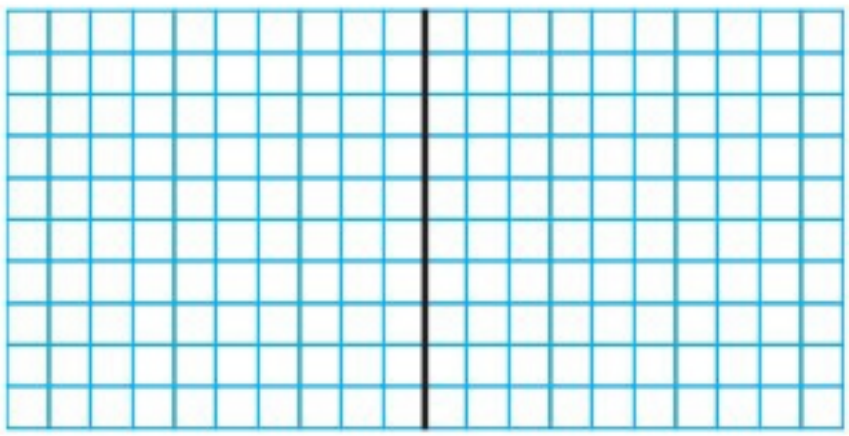
MAFS.5.NBT.2.7

Explore and Grow

A rectangle is 0.8 meter long and 0.7 meter wide. Use a model to find the area of the rectangle.



Use a model to find 0.8×1.7.



MP **Reasoning** When using a model to multiply decimals, how do you determine the number of rows and columns to shade?

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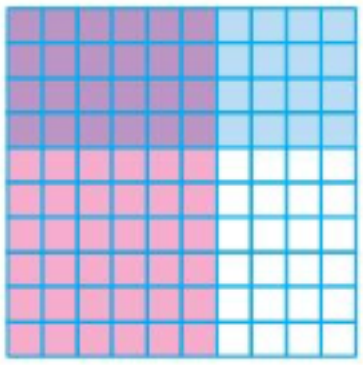
Think and Grow: Use Models to Multiply Decimals

Example Use a model to find 0.4×0.6.

Use a model. Shade 4 rows to represent 0.4 and shade 6 columns to represent 0.6.



Remember, each row and each column represent 0.1.

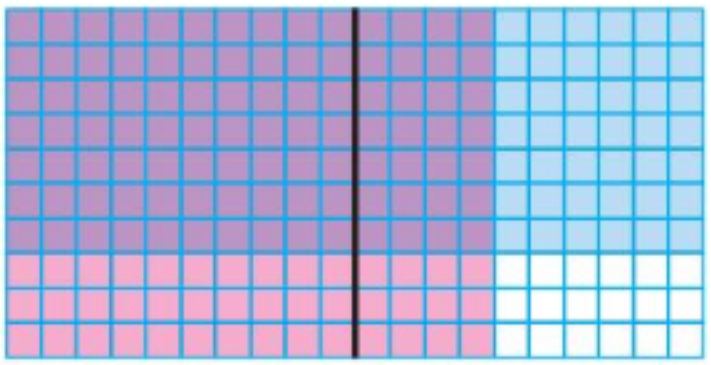


_____ squares are shaded twice.

So, $0.4 \times 0.6 =$ _____.

Example Use a model to find 0.7×1.4.

Use a model. Shade 7 rows to represent 0.7 and shade 14 columns to represent 1.4.



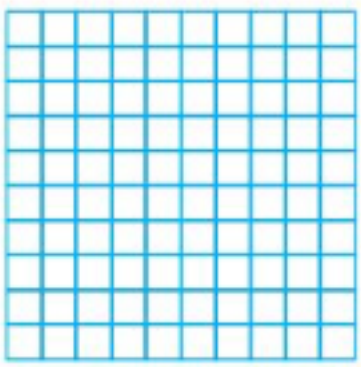
_____ squares are shaded twice.

So, $0.7 \times 1.4 =$ _____.

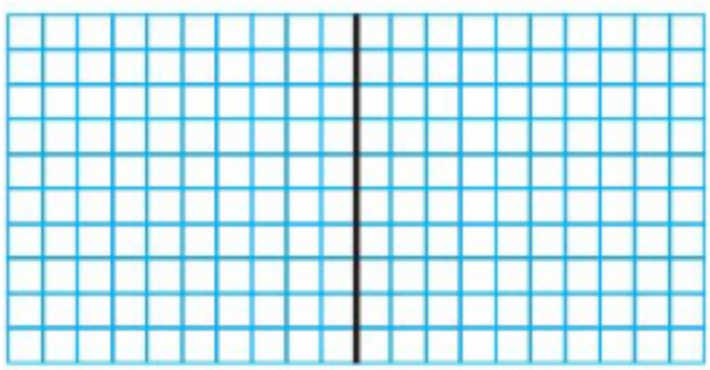
Show and Grow

Use the model to find the product.

1. $0.9 \times 0.2 =$ _____



2. $0.8 \times 1.5 =$ _____



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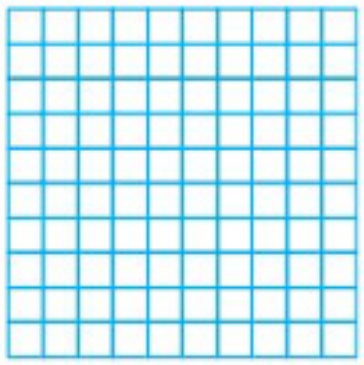
Name _____

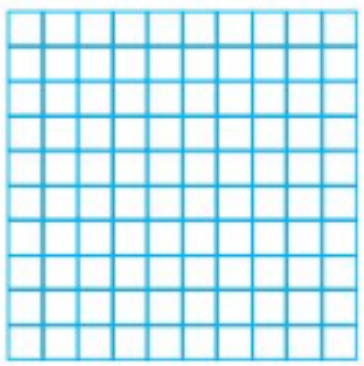
Apply and Grow: Practice

Use the model to find the product.

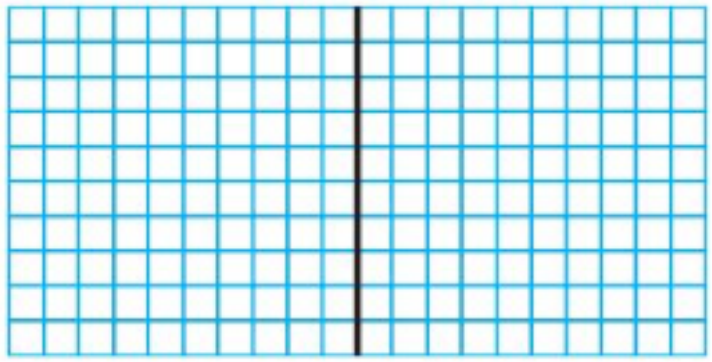
3. $0.4 \times 0.4 =$ _____



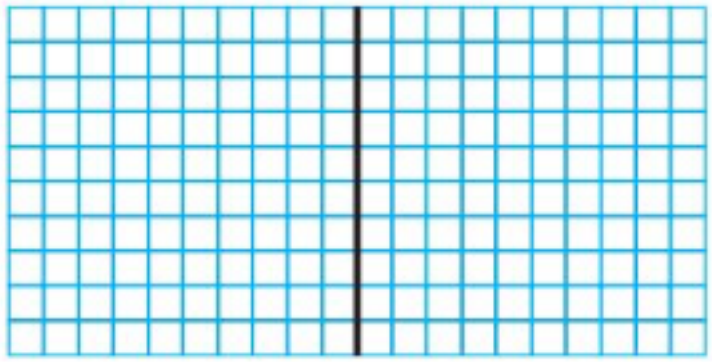
4. $0.9 \times 0.9 =$ _____



5. $0.2 \times 1.7 =$ _____



6. $0.6 \times 1.6 =$ _____

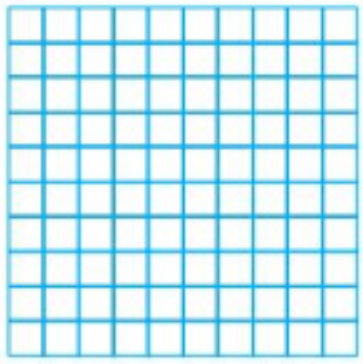




7. On Saturday, you ride your bike 1.5 miles. On Sunday, you ride your bike 0.7 times as far as you did on Saturday. How far do you ride your bike on Sunday?

8. MP **Reasoning** When multiplying 0.4×0.3, why is the product less than each of the factors?

9. DIG DEEPER! Shade the model to represent the product of 0.6 and 0. What is the product? Explain.



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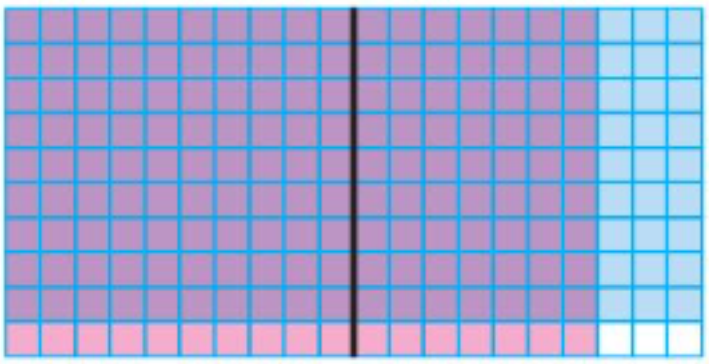
Think and Grow: Modeling Real Life



Example A donkey is 0.9 meter tall. A horse is 1.7 times as tall as the donkey. How much taller is the horse than the donkey?

Multiply 0.9 by 1.7 to find the height of the horse.

Use a model. Shade 9 rows to represent 0.9 and shade 17 columns to represent 1.7.



_____ squares are shaded twice.

So, $0.9 \times 1.7 =$ _____.

Subtract the height of the donkey from the height of the horse.

$$\begin{array}{r} \square \\ -\ 0.9 \\ \hline \square \end{array}$$

So, the horse is _____ meter taller than the donkey.

Show and Grow

10. On Sunday, you run 0.6 mile. On Monday, you run 1.3 times as far as you run on Sunday. How many more miles do you run on Monday than on Sunday?

11. A candle burns 0.2 ounce of wax each hour. A candle with 14.5 ounces of wax burns for 2.5 hours. How much wax is left?

12. **DIG DEEPER!** You have a bottle that contains 1.5 liters of apple juice. You drink 0.2 of the bottle on Friday, and 0.3 of the juice remaining in the bottle on Saturday. How much apple juice do you have left?



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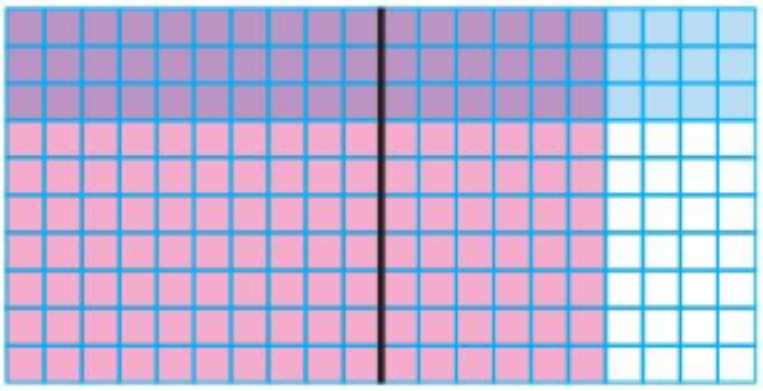
Name _____

Homework & Practice 5.5

Learning Target: Use models to multiply decimals.

Example Use a model to find 0.3×1.6.

Use a model. Shade 3 rows to represent 0.3 and shade 16 columns to represent 1.6.

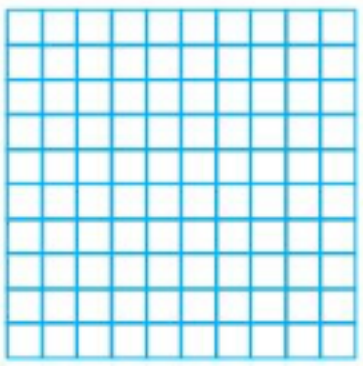


48 squares are shaded twice.

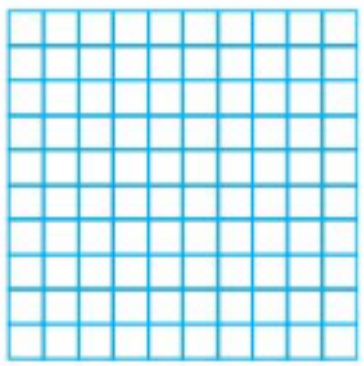
So, $0.7 \times 1.4 = 0.48$.

Use the model to find the product.

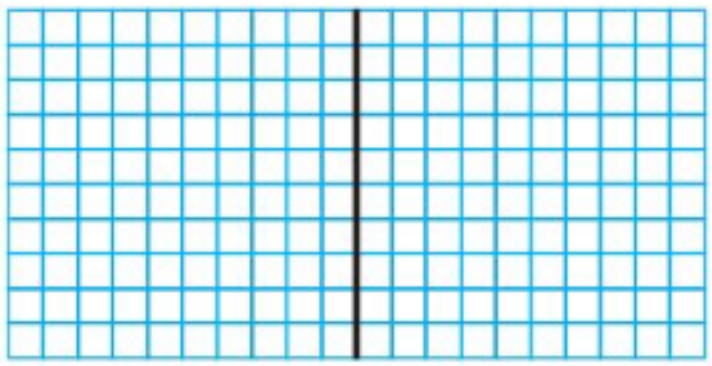
1. $0.8 \times 0.9 =$ _____



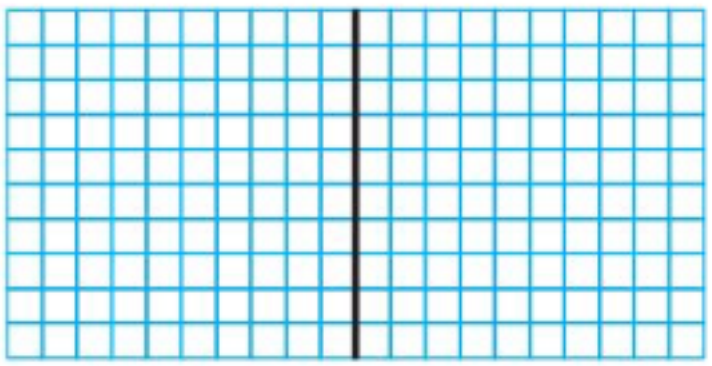
2. $0.4 \times 0.2 =$ _____



3. $0.6 \times 1.9 =$ _____



4. $0.7 \times 1.2 =$ _____



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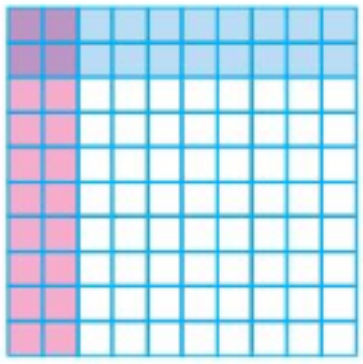
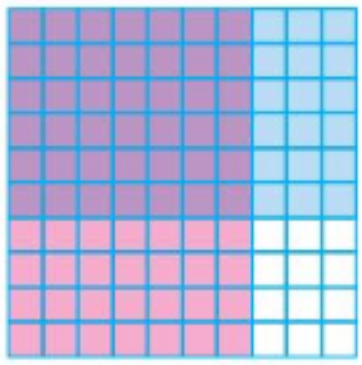
5. One banana contains 1.3 grams of protein. How much protein is in 0.5 of a banana?

6. **Reasoning** When multiplying 0.6 and 1.2, why is the product less than only one of the factors?

7. **YOU BE THE TEACHER** Newton says that $0.2 \times 0.2 = 0.36$, because there are 36 squares shaded. Is he correct? Explain.



8. **Structure** Write a multiplication equation that is represented by the model.



9. **Modeling Real Life** A pancake batter recipe calls for 0.5 cup of water. The recipe calls for 1.5 times as much pancake mix as water. How much more pancake mix is needed than water?



10. **DIG DEEPER!** To make crafts, you buy colored paper for $1.90. You buy a pack of googly eyes that costs 0.4 times as much as the colored paper. How much money do you spend in all?



Review & Refresh

Write the value of the underlined digit.

11. 5,<u>1</u>20,379

12. 400,<u>6</u>81

13. <u>7</u>,245,819

14. <u>2</u>3,504

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Name _____

Use Partial Products to Multiply Decimals

5.6

Learning Target: Use partial products to multiply decimals.

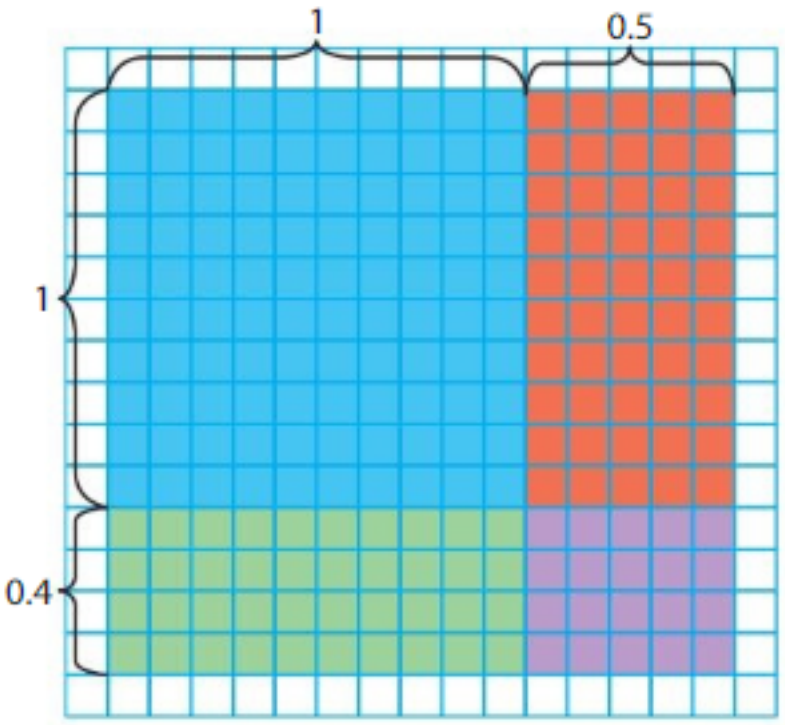
Success Criteria:

- I can write the partial products for a multiplication problem.
- I can add the partial products to find a product.

FLORIDA STANDARDS
MAFS.5.NBT.2.7

Explore and Grow

Use the area model and partial products to find 1.4×1.5.



$$\begin{array}{r} 1.4 \\ \times\ 1.5 \\ \hline \square \\ \square \\ \square \\ +\ \square \\ \hline \square \end{array}$$

MP **Structure** How can you use partial products to multiply decimals?

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Think and Grow: Use Partial Products to Multiply

Example Use partial products to find 3.2×4.8.

Estimate _____

Step 1: Multiply the tenths by the tenths.

$$\begin{array}{r} 3.2 \\ \times\ 4.8 \\ \hline \square \end{array} \quad 0.2 \times 0.8$$

Step 2: Multiply the ones by the tenths.

$$\begin{array}{r} 3.2 \\ \times\ 4.8 \\ \hline 0.16 \\ \square \end{array} \quad 3 \times 0.8$$



Step 3: Multiply the tenths by the ones.

$$\begin{array}{r} 3.2 \\ \times\ 4.8 \\ \hline 0.16 \\ 2.4 \\ \square \end{array} \quad 0.2 \times 4$$

Step 4: Multiply the ones by the ones.

$$\begin{array}{r} 3.2 \\ \times\ 4.8 \\ \hline 0.16 \\ 2.4 \\ 0.8 \\ +\ \square \\ \hline \square \end{array} \quad \begin{array}{l} 3 \times 4 \\ \\ \\ \\ \\ \text{Add the partial products.} \end{array}$$

So, $3.2 \times 4.8 =$ _____.

Reasonable? _____ is close to _____. ✓

Show and Grow

Find the product. Check whether your answer is reasonable.

1.
$$\begin{array}{r} 4.5 \\ \times\ 2.1 \\ \hline \square \\ \square \\ \square \\ +\ \square \\ \hline \end{array}$$

2.
$$\begin{array}{r} 2.7 \\ \times\ 8.3 \\ \hline \square \\ \square \\ \square \\ +\ \square \\ \hline \end{array}$$

3.
$$\begin{array}{r} 5.4 \\ \times\ 3.3 \\ \hline \square \\ \square \\ \square \\ +\ \square \\ \hline \end{array}$$

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Name _____

Apply and Grow: Practice

Find the product. Check whether your answer is reasonable.

4. $\begin{array}{r} 4.1 \\ \times\ 2.3 \\ \hline \end{array}$

5. $\begin{array}{r} 16.7 \\ \times\ 0.4 \\ \hline \end{array}$

6. $\begin{array}{r} 5.9 \\ \times\ 8.6 \\ \hline \end{array}$

7. $23.7 \times 3.5 =$ _____

8. $10.6 \times 14.7 =$ _____

9. $1.2 \times 3.71 =$ _____

10. A space probe travels 643.5 miles every minute. How far does it travel in 1.5 minutes?



11. MP **Number Sense** Which products are greater than 20.4?

3.4×7.2 $\qquad$ 2.5×4.8

3.2×6.3 $\qquad$ 8.6×2.4

12. MP **Precision** How can you use estimation to help you place the decimal point in a product? Explain.

13. DIG DEEPER! Write a multiplication equation shown by the partial products.

$0.14 + 0.2 + 2.1 + 3$

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Think and Grow: Modeling Real Life



Example A geologist has a blue geode that weighs 2.5 pounds. The geologist has a purple geode that weighs 1.6 times as much as the blue geode. What is the total weight of the geodes?

Find the weight of the purple geode by multiplying the weight of the blue geode by 1.6.

$$\begin{array}{r} 2.5 \\ \times\ 1.6 \\ \hline \end{array}$$

The weight of the purple geode is _____ pounds.

Add the weights of the blue geode and the purple geode.

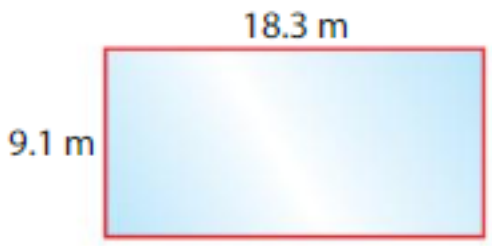
$$\begin{array}{r} 2.5 \\ +\ \square \\ \hline \end{array}$$

The total weight of the geodes is _____ pounds.

Show and Grow

14. You buy 3.5 yards of yellow fabric to make a Chinese dragon. You buy 2.5 times as much red fabric as yellow fabric. How many yards of fabric do you buy in all?





15. An employee cleans the surface of the rectangular ice rink. What is the area of the ice rink?

16. There are 89.1 milligrams of Vitamin C in 1 cup of strawberries. There are 83.2 milligrams of Vitamin C in 1 cup of orange slices. You eat 2.5 cups of strawberries and 1.5 cups of orange slices. How much Vitamin C do you consume?

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Name _____

Homework & Practice 5.6

Learning Target: Use partial products to multiply decimals.

Example Use partial products to find 9.3×2.5. Estimate $9 \times 3 = 27$

Step 1: Multiply the tenths by the tenths.

$$\begin{array}{r} 9.3 \\ \times\ 2.5 \\ \hline \boxed{0.15} \end{array} \quad 0.3 \times 0.5$$

Step 2: Multiply the ones by the tenths.

$$\begin{array}{r} 9.3 \\ \times\ 2.5 \\ \hline 0.15 \\ \boxed{4.5} \end{array} \quad 9 \times 0.5$$

Step 3: Multiply the tenths by the ones.

$$\begin{array}{r} 9.3 \\ \times\ 2.5 \\ \hline 0.15 \\ 4.5 \\ \boxed{0.6} \end{array} \quad 0.3 \times 2$$

You can do these steps in any order.

Step 4: Multiply the ones by the ones.

$$\begin{array}{r} 9.3 \\ \times\ 2.5 \\ \hline 0.15 \\ 4.5 \\ 0.6 \\ +\ \boxed{18} \\ \hline \boxed{23.25} \end{array} \quad \begin{array}{l} 9 \times 2 \\ \\ \\ \\ \\ \text{Add the partial products.} \end{array}$$



So, $9.3 \times 2.5 =$ 23.25.

Reasonable? 23.25 is close to 27. ✓

Find the product. Check whether your answer is reasonable.

1.
$$\begin{array}{r} 2.4 \\ \times\ 1.2 \\ \hline \square \\ \square \\ \square \\ +\ \square \\ \hline \end{array}$$

2.
$$\begin{array}{r} 3.1 \\ \times\ 6.7 \\ \hline \square \\ \square \\ \square \\ +\ \square \\ \hline \end{array}$$

3.
$$\begin{array}{r} 7.3 \\ \times\ 5.9 \\ \hline \square \\ \square \\ \square \\ +\ \square \\ \hline \end{array}$$

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Find the product. Check whether your answer is reasonable.

4. $\begin{array}{r} 2.8 \\ \times\ 3.7 \\ \hline \end{array}$

5. $\begin{array}{r} 5.6 \\ \times\ 4.6 \\ \hline \end{array}$

6. $\begin{array}{r} 14.5 \\ \times\ 7.8 \\ \hline \end{array}$

7. $21.4 \times 9.3 =$ _____

8. $58.1 \times 8.6 =$ _____

9. $0.6 \times 1.45 =$ _____

10. Writing How is multiplying two decimals different than multiplying a whole number and a decimal?

11. DIG DEEPER! Two numbers each have one decimal place. Is it possible for their product to be a whole number? Explain.

12. Modeling Real Life A red-bellied snake is 11.5 inches long. A ring-necked snake is 1.4 times as long as the red-bellied snake. How much longer is the ring-necked snake than the red-bellied snake?

13. Modeling Real Life You use 2 cans of tomato sauce with mushrooms and 1.5 cans of plain tomato sauce to make lasagna. Each can contains 10.5 ounces. How many ounces of tomato sauce are in the lasagna?



Review & Refresh

Find the product.

14. $24 \times 10^4 =$ _____

15. $700 \times 30 =$ _____

16. $200 \times 600 =$ _____

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Name _____

Use Strategies to Multiply Decimals

5.7

Learning Target: Use estimation and properties to multiply decimals.

Success Criteria:

- I can use estimation to place the decimal point in a product.
- I can use properties to multiply decimals.
- I can explain the strategy I used to multiply.

FLORIDA STANDARDS
MAFS.5.NBT.2.7

Explore and Grow

Without multiplying, determine the pairs of expressions that have the same value. Explain your reasoning.

1.26×38

12.6×0.38

12.6×38

1.26×3.8

126×3.8

126×0.38

MP **Reasoning** How do you know how many decimal places are in each product? Explain.

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Think and Grow: Use Strategies to Multiply

You can use estimation and place value, or multiplication properties to multiply.

Example Find 3.84×2.1.

Estimate _____

Multiply 384 by 21. Then place the decimal point.

Because the product should be close to your estimate, place the decimal point after the _____.

$$\begin{array}{r} {\scriptstyle 1} \\ 384 \\ \times \quad 21 \\ \hline 384 \\ +\,7{,}680 \\ \hline 8{,}064 \end{array}$$

So, $3.84 \times 2.1 =$ _____.

Example Find 0.3×0.7.

You can use properties to multiply.

$0.3 \times 0.7 = 3 \times 0.1 \times 7 \times 0.1$ Think: $3 \times 0.1 = 0.3$ and $7 \times 0.1 = 0.7$.

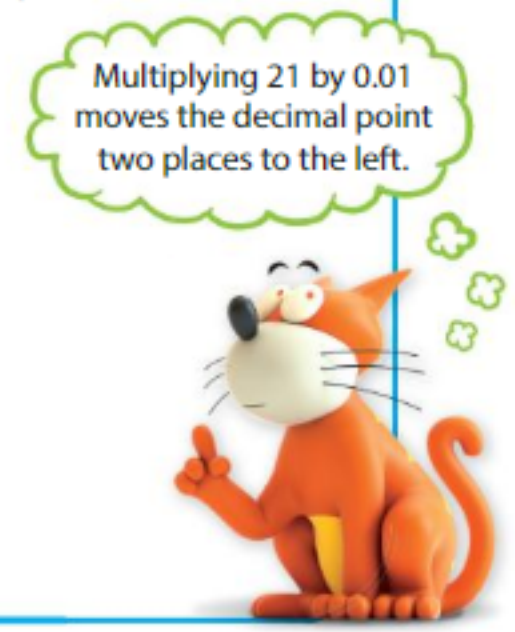
$= 3 \times 7 \times 0.1 \times 0.1$ Commutative Property of Multiplication

$= (3 \times 7) \times (0.1 \times 0.1)$ Associative Property of Multiplication

$= 21 \times 0.01$

$=$ _____

So, $0.3 \times 0.7 =$ _____.



Show and Grow

Find the product. Explain the strategy you used.

1. $4.91 \times 0.8 =$ _____

2. $10.2 \times 5.6 =$ _____

3. $12.03 \times 4.2 =$ _____

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Name _____

Apply and Grow: Practice

Find the product. Explain the strategy you used.

4. $0.9 \times 3.2 =$ _____

5. $1.7 \times 0.84 =$ _____

6. $2.4 \times 2.4 =$ _____

7. $12.1 \times 0.8 =$ _____

8. $0.05 \times 0.9 =$ _____

9. $7.4 \times 8.6 =$ _____

10. A newly hatched fish is 0.25 inch long. An adult fish is 7.6 times as long as the newly hatched fish. How long is the adult fish?



11. **Writing** Which strategy do you prefer to use to multiply decimals? Explain.

12. MP **Structure** Your friend multiplies two decimals by rewriting the product as $(56 \times 3) \times (0.01 \times 0.1)$. What two decimals could she be multiplying?

13. MP **Precision** How many decimal places are in the unknown factor? Explain.

_____ $\times 2.8 = 4.48$

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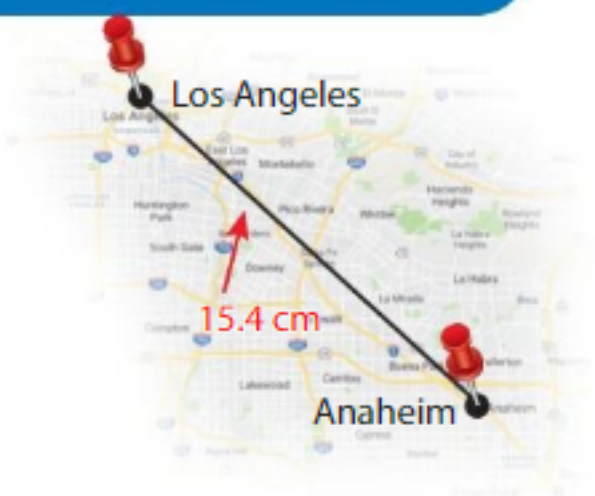
Think and Grow: Modeling Real Life

Example You measure the distance between Los Angeles and Anaheim on a map. Each centimeter represents 2.5 kilometers. What is the actual distance between the cities?



Because each centimeter represents 2.5 kilometers, multiply 15.4 and 2.5 to find the actual distance.

Multiply 154 by 25. Then place the decimal point.

Estimate _____

Because the product should be close to your estimate, place the decimal point after the _____.

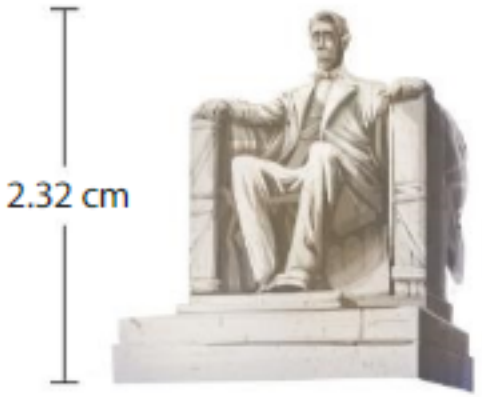
$15.4 \times 2.5 =$ _____

$$\begin{array}{r} {\scriptstyle 1} \\ \cancel{2}{\scriptstyle 2} \\ 154 \\ \times \quad 25 \\ \hline 770 \\ +\ 3{,}080 \\ \hline 3{,}850 \end{array}$$

So, the actual distance between the cities is _____ kilometers.

Show and Grow

14. You measure the height of the replica of the Lincoln statue. Each centimeter represents 2.5 meters. What is the actual height of the Lincoln statue?



15. **DIG DEEPER!** How much does the bunch of bananas cost? Explain.



16. **DIG DEEPER!** Your friend has a digital photograph file that is 0.25 megabyte larger than 7.5 times the file size of your photograph. What is the file size of your friend's photograph?

My Photo



File Size: 0.5 MB

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Name _____

Homework & Practice 5.7

Learning Target: Use estimation and properties to multiply decimals.

Example Find 0.5×0.12.

You can use properties to multiply.

$0.5 \times 0.12 = 5 \times 0.1 \times 12 \times 0.01$ Think: $5 \times 0.1 = 0.5$ and $12 \times 0.01 = 0.12$

$= 5 \times 12 \times 0.1 \times 0.01$ Commutative Property of Multiplication

$= (5 \times 12) \times (0.1 \times 0.01)$ Associative Property of Multiplication

$= 60 \times 0.001$

$= \underline{0.06}$

Multiplying 60 by 0.001 moves the decimal point three places to the left.



Find the product. Explain the strategy you used.

1. $0.8 \times 1.4 =$ _____

2. $1.3 \times 2.9 =$ _____

3. $1.7 \times 0.6 =$ _____

4. $3.86 \times 2.8 =$ _____

5. $0.07 \times 4.5 =$ _____

6. $2.56 \times 6.25 =$ _____

7. $1.18 \times 0.8 =$ _____

8. $18.2 \times 0.9 =$ _____

9. $6.7 \times 5.2 =$ _____

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10. A beaker contains 0.75 liter of a solution. You use 0.1 of the solution for an experiment. How much of the solution do you use?



11. MP **Structure** Which expressions are equivalent to 0.6×0.3?

$(6 \times 3) \times (0.1 \times 0.1)$

$(6 \times 3) \times (0.01 \times 0.01)$

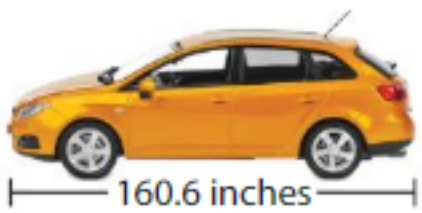
$(6 \times 3) \times \left(\frac{1}{10} \times \frac{1}{10}\right)$

$(6 \times 0.1) \times (3 \times 0.1)$

12. MP **Number Sense** Your friend finds 0.92×0.3 by multiplying 92 and 3. Explain how your friend will know where to place the decimal point in the product.

13. MP **Number Sense** When finding 75×0.01, where will the decimal point be placed? Explain.

14. **Modeling Real Life** A toy car designer measures the length of the actual car shown. A toy car is 0.05 times as long as the actual car. How long is the toy car?



15. **Modeling Real Life** A carpet installer measures 3 rectangular bedrooms for new carpeting. Which bedroom needs the most carpeting?

Bedroom A: 3.1 meters by 3.1 meters

Bedroom B: 2.9 meters by 3.2 meters

Bedroom C: 2.5 meters by 3.4 meters

Review & Refresh

16. Round 4.163.

Nearest whole number: _____

Nearest tenth: _____

Nearest hundredth: _____

17. Round 10.187.

Nearest whole number: _____

Nearest tenth: _____

Nearest hundredth: _____

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Name _____

Multiply Decimals 5.8

Learning Target: Multiply decimals.

Success Criteria:

- I can multiply whole numbers.
- I can determine the number of decimal places in a product.
- I can find a product.

FLORIDA STANDARDS
MAFS.5.NBT.2.7

Explore and Grow

Choose any strategy to find each product.

0.8×0.4

2.1×1.25

0.22×4.1

1.4×1.6

Multiplication Strategies

Use a Model

Partial Products

Estimation and Place Value

Properties of Multiplication

MP **Reasoning** How can you determine the number of decimal places a product will have before multiplying?

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Think and Grow: Multiply Decimals

Key Idea To multiply decimals, multiply as you do with whole numbers. The number of decimal places in the product is equal to the sum of the number of decimal places in the factors.

$$\begin{array}{rl} 2.09 & \leftarrow \text{2 decimal places} \\ \times\ 1.3 & \leftarrow +\ \text{1 decimal place} \\ \hline 2.717 & \leftarrow \text{3 decimal places} \end{array}$$

Example Find 4.1×2.7. Estimate _____

$$\begin{array}{rl} 4.1 & \leftarrow \text{1 decimal place} \\ \times\ 2.7 & \leftarrow +\ \text{1 decimal place} \\ \hline 287 & \\ +\ 820 & \\ \hline \square & \leftarrow \text{2 decimal places} \end{array}$$

So, $4.1 \times 2.7 =$ _____. Reasonable? _____ is close to _____. ✓

Example Find 0.48×0.2. Estimate $0.5 \times 0 = 0$

$$\begin{array}{rl} {\scriptstyle 1} & \\ 0.48 & \leftarrow \text{2 decimal places} \\ \times\ 0.2 & \leftarrow +\ \text{1 decimal place} \\ \hline \square & \leftarrow \text{3 decimal places} \end{array}$$

Place 2 zeros to the left of 96. There are 3 decimal places.



So, $0.48 \times 0.2 =$ _____. Reasonable? _____ is close to 0. ✓

Show and Grow

Find the product.

1. $\begin{array}{r} 1.8 \\ \times\ 7.3 \\ \hline \end{array}$

2. $\begin{array}{r} 12.41 \\ \times\ 6.2 \\ \hline \end{array}$

3. $\begin{array}{r} 0.14 \\ \times\ 0.7 \\ \hline \end{array}$

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Name _____

Apply and Grow: Practice

Find the product.

4.
$$\begin{array}{r} 2.4 \\ \times\ 8.9 \\ \hline \end{array}$$

5.
$$\begin{array}{r} 0.17 \\ \times\ 0.3 \\ \hline \end{array}$$

6.
$$\begin{array}{r} 35.4 \\ \times\ 6.2 \\ \hline \end{array}$$

7.
$$\begin{array}{r} 9.87 \\ \times\ 23.6 \\ \hline \end{array}$$

8.
$$\begin{array}{r} 16.4 \\ \times\ 7.95 \\ \hline \end{array}$$

9.
$$\begin{array}{r} 0.8 \\ \times\ 0.9 \\ \hline \end{array}$$

10. $46.5 \times 0.73 =$ _____

11. $14.8 \times 9.3 =$ _____

12. $1.54 \times 2.6 =$ _____

13. A sugar glider weighs 0.35 times the weight of the pygmy slow loris. How much does the sugar glider weigh?



Pygmy slow loris: 14.9 ounces



Sugar glider

14. MP **Structure** Use the equation to write two different multiplication expressions that have products of 28.34.

$$109 \times 26 = 2{,}834$$

15. DIG DEEPER! Without calculating, explain how many decimal places are in the product $0.6 \times 0.4 \times 1.9$. Rewrite the expression as the product of two decimals to support your answer.

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Think and Grow: Modeling Real Life



Example Nutritionists recommend that fifth-graders should consume about 28 grams of fiber each day. One serving of broccoli contains 3.8 grams of fiber. You eat 4.5 servings of broccoli in 1 day. Do you consume enough fiber for the day by eating broccoli? Explain.

Multiply 3.8 by 4.5 to find how many grams of fiber you consume by eating broccoli.

$$\begin{array}{r} \overset{3}{\cancel{4}} \\ 3.8 \\ \times\ 4.5 \\ \hline 190 \\ +1,520 \\ \hline \boxed{} \end{array} \quad \begin{array}{l} \leftarrow \text{1 decimal place} \\ \leftarrow +\text{ 1 decimal place} \\ \\ \\ \leftarrow \text{2 decimal places} \end{array}$$

Compare the product to 28.

So, you _____ consume enough fiber for the day by eating broccoli.

Show and Grow

16. Your aunt drives a car from Cincinnati to Nashville. The car travels 30.4 miles using 1 gallon of gasoline. There are 6.5 gallons of gasoline in the tank. Can she drive the entire distance without adding more gas to the 6.5 gallons already in the tank? Explain.



17. **DIG DEEPER!** The equation shows how to convert a temperature C in degrees Celsius to a temperature F in degrees Fahrenheit. Convert the temperature shown to Fahrenheit.

$$1.8 \times C + 32 = F$$



18. **DIG DEEPER!** Pennies dated 1982 or later contain about 0.06 gram of copper. Pennies dated prior to 1982 contain about 49.2 times as much copper as newer pennies. How many total grams of copper are in the pennies shown?



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Name _____

Homework & Practice 5.8

Learning Target: Multiply decimals.

Example Find 0.26×0.3.

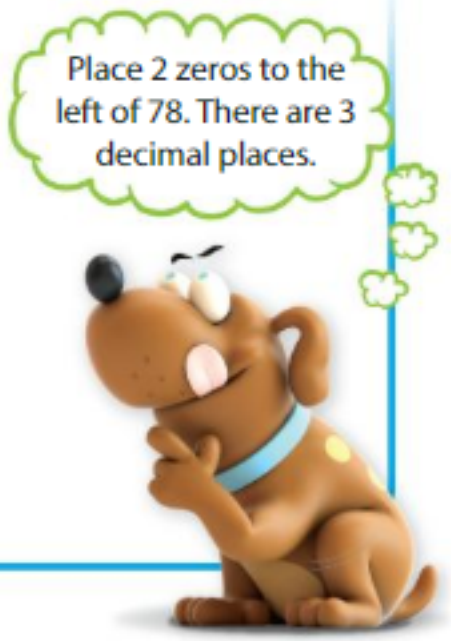
Estimate $0.3 \times 0 = 0$



$$\begin{array}{r} {\scriptstyle 1} \\ 0.2\,6 \\ \times\ 0.3 \\ \hline 0.078 \end{array} \quad \begin{array}{l} \leftarrow \text{2 decimal places} \\ \leftarrow + \text{1 decimal place} \\ \leftarrow \text{3 decimal places} \end{array}$$

So, $0.26 \times 0.3 =$ 0.078 .

Reasonable? 0.078 is close to 0. ✓



Find the product.

1. $\begin{array}{r} 12.8 \\ \times\ 0.4 \\ \hline \end{array}$

2. $\begin{array}{r} 3.97 \\ \times\ 62.4 \\ \hline \end{array}$

3. $\begin{array}{r} 5.2 \\ \times\ 0.9 \\ \hline \end{array}$

4. $\begin{array}{r} 18.3 \\ \times\ 9.27 \\ \hline \end{array}$

5. $\begin{array}{r} 2.57 \\ \times\ 4.6 \\ \hline \end{array}$

6. $\begin{array}{r} 22.5 \\ \times\ 3.7 \\ \hline \end{array}$

7. $0.89 \times 0.3 =$ _____

8. $7.1 \times 5.6 =$ _____

9. $13.63 \times 9.2 =$ _____

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10. The Miniature pinscher weighs 0.12 times the weight of the Doberman pinscher. How much does the Miniature pinscher weigh?



Doberman pinscher: 32.65 kilograms



Miniature pinscher

11. MP **Reasoning** Explain how you can tell which product is greater without multiplying or estimating.

3.75×922 37.5×9.22

12. **Modeling Real Life** Nutritionists recommend that fifth-graders should consume about 5 ounces of protein each day. One serving of yogurt contains 0.6 ounce of protein. You eat 2.5 servings of yogurt in 1 day. Do you consume enough protein for the day by eating yogurt? Explain.



13. DIG DEEPER! Each 18-karat gold ring shown is a mixture of gold and other metals. One gram of 18-karat gold contains 0.75 gram of gold. How many total grams of gold are in the rings shown?



1.8 grams 1.9 grams 2.1 grams

Review & Refresh

Write the words as an expression. Then interpret the expression.

14. Subtract 10 from 50, then divide by 5.

15. Add the product of 12 and 6 to the product of 6 and 8.

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Name _____

Problem Solving: Multiply with Money

5.9

Learning Target: Solve multi-step word problems involving money.

Success Criteria:

- I can understand a problem.
- I can make a plan to solve.
- I can solve a problem.

FLORIDA STANDARDS
MAFS.5.NBT.2.7

Explore and Grow

Explain how you would estimate the cost of 1.9 pounds of ham, 0.8 pound of turkey, and 1 pound of cheese.



MP **Reasoning** Is your answer an overestimate or an underestimate? Explain.

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Think and Grow: Problem Solving: Multiply with Money



Example Carrots cost $0.90 per pound. You buy 2.6 pounds of carrots and give the cashier $5. How much change do you receive?

Understand the Problem

What do you know?

- Carrots cost $0.90 per pound.
- You buy 2.6 pounds of carrots.
- You pay with $5.

What do you need to find?

- You need to find the amount of change you receive.

Make a Plan

How will you solve?

Write and solve an equation: Multiply the number of pounds by the cost per pound, and subtract from $5.

Solve

Amount of change you receive	=	Amount of money you pay with	−	(	Weight of carrots in pounds	×	Price of carrots in pounds	)

Let c represent the amount of change you receive.

$$c = 5 - (2.6 \times 0.9)$$

$$= 5 - \_\_\_\_\_$$

$$= \_\_\_\_\_$$

So, you receive $_____ in change.

Show and Grow

1. Landscaping rocks cost $0.35 per pound. A landscaper buys 86.4 pounds of rocks with $40. How much change does she receive?

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Apply and Grow: Practice

Understand the problem. What do you know? What do you need to find? Explain.

2. A gallon of milk cost $0.82 in 1960. In 2015, it cost $0.03 more than 4 times the cost in 1960. How much did a gallon of milk cost in 2015?



3. A secretary earns $10.75 each hour. He works 8 hours each day, 5 days each week. How much money does he earn in 1 week?

Understand the problem. Then make a plan. How will you solve? Explain.

4. You download 8 songs for $1.29 each and 1 song for $0.99. How much do you pay for all of the songs?

5. Your friend buys a snack for $2.75, and a book that costs 5 times as much as the snack. He also buys a poster that costs $3.50 less than the book. How much does the poster cost?

6. A pair of shoes costs $35. Newton has a coupon to pay 0.8 of the price. Descartes has a $10 off coupon. Who will pay more for the shoes?

7. Two friends eat at a restaurant for $34. They calculate the tip by multiplying $34 by 0.18. How much do they pay for the meal, including the tip?



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Think and Grow: Modeling Real Life

Example A traveler gives a cashier 100 U.S. dollars to exchange for European euros. A $7.50 service fee is deducted from the amount given. How many European euros does the traveler receive?

Recent Foreign Exchange Rates	
1 U.S. dollar	0.86 European euro
1 U.S. dollar	0.76 British pound
1 U.S. dollar	1.28 Canadian dollars

Think: What do you know? What do you need to find? How will you solve?

Number of European euros received = (Number of U.S. dollars given − Service fee) × Foreign exchange rate

Let m represent the number of European euros the traveler receives.

$m = (100 - 7.5) \times 0.86$

$= \_\_\_\_\_ \times 0.86$

$= \_\_\_\_\_$

So, the traveler receives € _____.



Show and Grow

Use the table above.

8. You need 50 Canadian dollars. You give a cashier 50 U.S. dollars to exchange for Canadian dollars. A $9.50 service fee is deducted from the amount given. Do you have enough Canadian dollars? Explain.

9. **DIG DEEPER!** In the example, the traveler decides to exchange the same number of U.S. dollars for British pounds. Without calculating, determine whether the traveler receives more European euros or British pounds. Explain.

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Name _____

Homework & Practice 5.9

Learning Target: Solve multi-step word problems involving money.

Example Your friend saves $15.85 each month for 8 months. She saves $103.98 in the ninth month. How much money does she save after 9 months?

Think: What do you know? What do you need to find? How will you solve?

Total amount of money saved	=	(Amount of money saved each month	×	Number of months)	+	Amount of money saved in the ninth month

Let m represent the total amount of money saved.

$m = (15.85 \times 8) + 103.98$

$= \underline{126.80} + 103.98$

$= \underline{230.78}$

So, she saves $\$\underline{230.78}$ after 9 months.

Understand the problem. Then make a plan. How will you solve? Explain.

1. One gallon of gasoline costs $2.75. Your cousin fills his car with 10 gallons of gasoline each week. How much money does he spend on gasoline in 1 year?

2. Newton buys a guitar for $46 and a guitar amplifier. The amplifier costs $1.54 more than 1.26 times the cost of the guitar. How much does the amplifier cost?

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3. One pound of cheese costs $3.98. You buy a box of crackers for $3.37 and 2.5 pounds of cheese. How much do you spend in all?

4. **Writing** Write and solve a two-step word problem involving money.

5. **Modeling Real Life** You buy 2.75 pounds of pistachios and 2 pounds of cashews. Do you pay more for the pistachios or for the cashews? How much more?

Cost of Nuts per Pound	
Pistachios	$6.60
Cashews	$8.66

6. **Modeling Real Life** You, Newton, and Descartes sell items at a craft show. You earn $34.50. Newton earns 5 times as much as you do. Descartes earns 0.1 times as much as Newton does. How much do the three of you earn in all?

7. **DIG DEEPER!** A daycare employee earns $10.90 for the first 40 hours he works in 1 week. He is paid 1.5 times that rate for each additional hour that he works. How much money does he earn working for 43 hours in 1 week?

Review & Refresh

Find the sum. Check whether your answer is reasonable.

8. 24.93 + 3.86 = _____

9. 105.6 + 37.1 = _____

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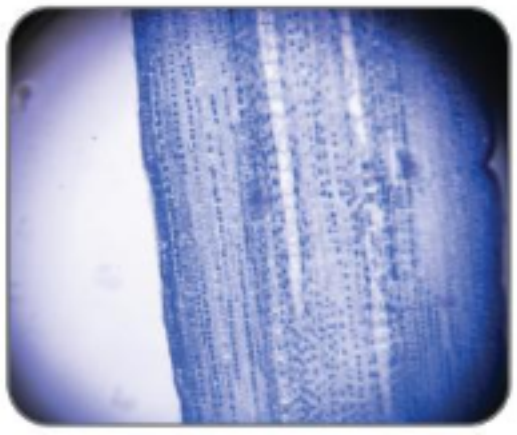
Name _____

Performance Task 5

You study the different parts of a corn plant in science class.

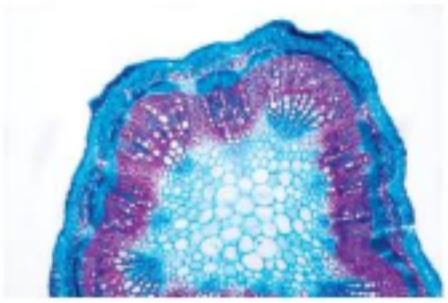


Corn root

1. You have a corn root sample and a corn stem sample on microscope slides. When you view the samples through a microscope, the magnification number tells you how many times larger the image will be than the actual size. You see only a portion of the enlarged image.

a. The corn root sample is 0.6 millimeter wide. You magnify the image by 400. What is the width of the magnified corn root image?

b. You magnify the corn root sample by 1,200. How much wider is the image when magnified by 1,200 than by 400?



Corn stem

c. You have a sample of a corn stem. The corn stem sample is 9.6 times wider than the corn root sample. What is the width of the corn stem sample?

2. An ear of corn has about 16 rows of kernels. Each row has about 50 kernels of corn.



a. About 0.2 of the kernels are white and the rest are yellow. How many kernels are yellow?

b. Each ear of corn has about 0.25 pound of corn kernels. How many pounds of kernels are in a dozen ears of corn?

3. You measure the growth of a corn stalk. The corn stalk grows about 1.75 inches each day. About how many inches does the plant grow in 1 month? Justify your answer.

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Race Around the World: Multiplication

Directions:

1. Players take turns.
2. On your turn, flip a Race Around the World: Multiplication Card and find the product.
3. Move your piece to the next number on the board that is highlighted in the product.
4. The first player to make it back to North America wins!



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Chapter Practice 5

5.1 Multiplication Patterns with Decimals

Find the product.

1. $0.9 \times 10^3 =$ _____

2. $612.5 \times 0.1 =$ _____

3. $30.1 \times 10^2 =$ _____

4. $45.7 \times 0.01 =$ _____

5. $8.6 \times 10 =$ _____

6. $5.24 \times 0.1 =$ _____

5.2 Estimate Products of Decimals and Whole Numbers

Estimate the product.

7. 0.99×45

8. 3.15×8

9. 17×1.68

10. 95×5.02

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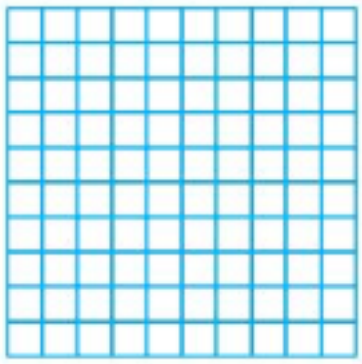
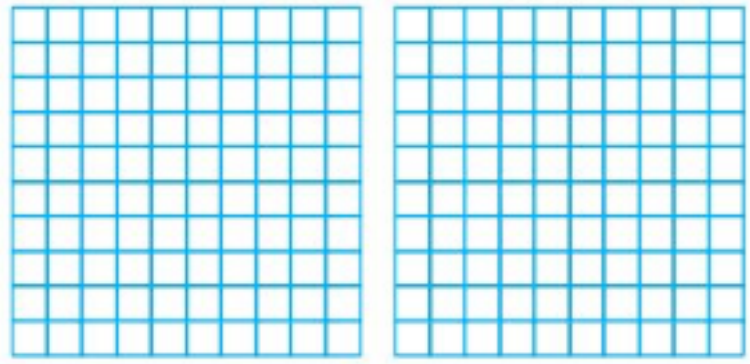
5.3 Use Models to Multiply Decimals and Whole Numbers

Find the product.

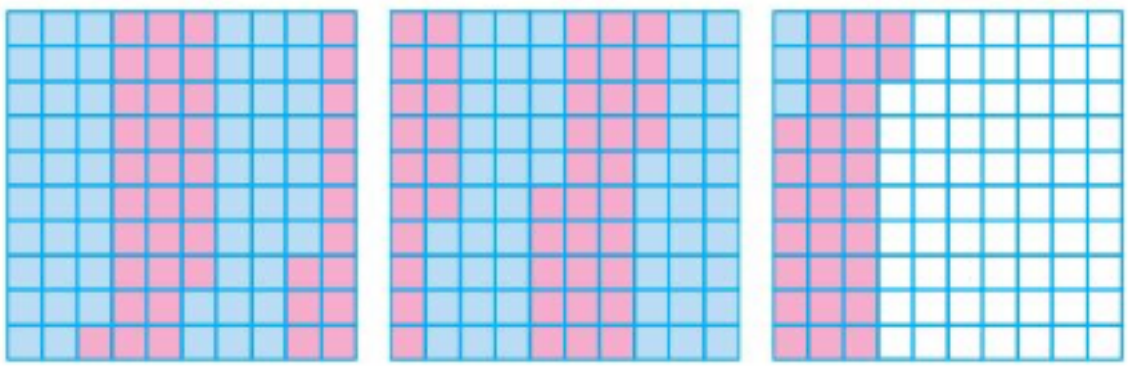
11. $0.3 \times 3 =$ _____



12. $0.17 \times 8 =$ _____



13. MP **Structure** Write an equation represented by the model.



5.4 Multiply Decimals and Whole Numbers

Find the product.

14. $3 \times 1.65 =$ _____

15. $2.3 \times 8 =$ _____

16. $9 \times 10.7 =$ _____

17. $18.65 \times 6 =$ _____

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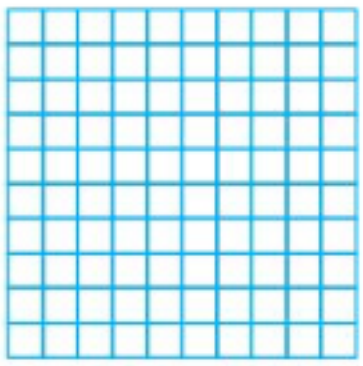
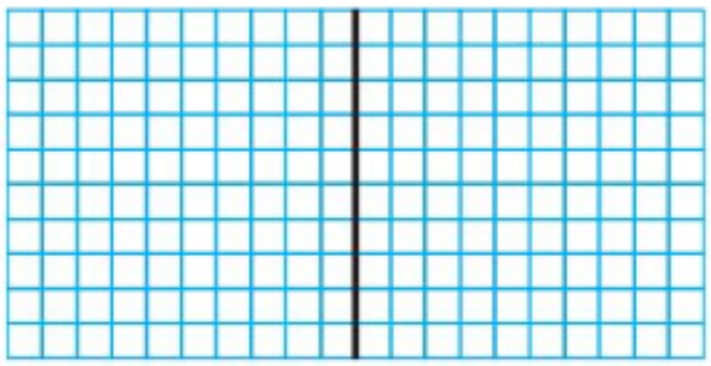
5.5 Use Models to Multiply Decimals

Use the model to find the product.

18. $0.5 \times 0.6 =$ _____



19. $1.8 \times 0.3 =$ _____



5.6 Use Partial Products to Multiply Decimals

Find the product. Check whether your answer is reasonable.

20.

$$\begin{array}{r} 8.1 \\ \times \quad 2.3 \\ \hline \square \\ \square \\ \square \\ + \quad \square \\ \hline \end{array}$$

21.

$$\begin{array}{r} 4.2 \\ \times \quad 9.5 \\ \hline \square \\ \square \\ \square \\ + \quad \square \\ \hline \end{array}$$

22.

$$\begin{array}{r} 7.6 \\ \times \quad 6.8 \\ \hline \square \\ \square \\ \square \\ + \quad \square \\ \hline \end{array}$$

23. $0.7 \times 6.5 =$ _____

24. $25.6 \times 16.9 =$ _____

25. $2.5 \times 6.81 =$ _____

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5.7 Use Strategies to Multiply Decimals

Find the product. Explain the strategy you used.

26. $0.4 \times 0.16 =$ _____

27. $0.2 \times 0.8 =$ _____

28. $2.5 \times 0.3 =$ _____

29. MP **Structure** Your friend multiplies two decimals by rewriting the product as $(8 \times 3) \times (0.1 \times 0.1)$. What two decimals is she multiplying?

5.8 Multiply Decimals

Find the product.

30.
$$\begin{array}{r} 5.8 \\ \times\ 0.3 \\ \hline \end{array}$$

31.
$$\begin{array}{r} 7.22 \\ \times\ 1.6 \\ \hline \end{array}$$

32.
$$\begin{array}{r} 40.8 \\ \times\ 9.5 \\ \hline \end{array}$$

5.9 Problem Solving: Multiply with Money

33. Your friend buys 4 glow sticks for $0.99 each. She pays with a $10 bill. How much change does she receive?

34. **Modeling Real Life** Descartes parks in the parking garage for 3 hours on Monday, 5 hours on Tuesday, and 10 hours on Wednesday. How much does he pay altogether?



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6 Divide Whole Numbers

- What is a hybrid car?
- Your cousin drives a hybrid car about 4 miles every 5 minutes. How can you find the number of miles he can drive in 1 hour?

Chapter Learning Target:
Understand dividing whole numbers.

Chapter Success Criteria:
- I can identify a whole number.
- I can describe division patterns.
- I can solve a problem using division.
- I can model division of numbers.

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6 Vocabulary

Review Words

evaluate
numerical expression
order of operations

Organize It

Use the review words to complete the graphic organizer. Then evaluate the expression.

To find the value of a _____

Use the _____.

$20 \div (6 + 4) \times 3 = 20 \div$ _____ $\times 3$

$=$ _____ $\times 3$

$=$ _____

So, $20 \div (6 + 4) \times 3 =$ _____.

Define It

What am I?

Operations that "go together," each other as addition and subtraction, or multiplication and division

$28 \div 7 = A$	$40 \div 4 = P$	$42 \div 7 = R$	$35 \div 5 = V$	$27 \div 3 = O$
$12 \div 6 = T$	$24 \div 8 = N$	$9 \div 9 = E$	$16 \div 2 = I$	$45 \div 9 = S$

8	3	7	1	6	5	1

9	10	1	6	4	2	8	9	3	5

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Chapter 6 Vocabulary Cards

inverse operations

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Operations that "undo" each other, such as addition and subtraction, or multiplication and division

Addition $19 + 12 = 31$	↔	Subtraction $31 - 12 = 19$
Multiplication $18 \times 4 = 72$	↔	Division $72 \div 4 = 18$

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6.1 Relate Multiplication and Division

Learning Target: Use multiplication to divide.

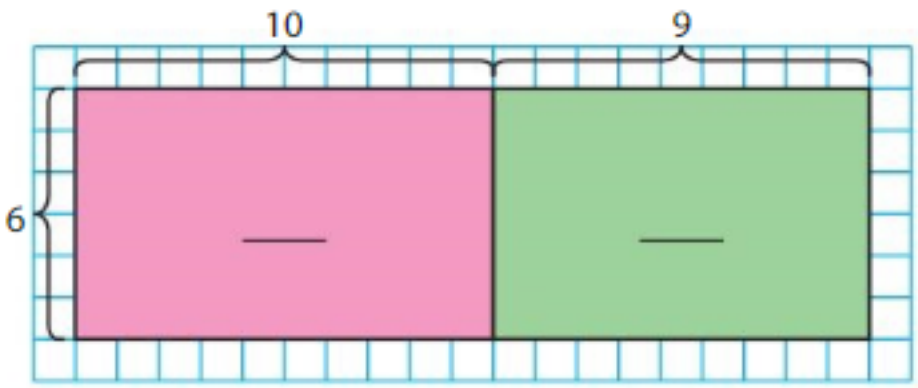
Success Criteria:

- I can explain how to use an area model to divide.
- I can write a related multiplication equation for a division problem.
- I can use multiplication to solve a division problem.

FLORIDA STANDARDS
MAFS.5.NBT.2.6

Explore and Grow

Use the area models to find 6×19 and $114 \div 6$.



$6 \times 19 =$ _____



$114 \div 6 =$ _____

MP **Reasoning** How do you think you can use multiplication to solve a division problem?

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Think and Grow: Relate Multiplication and Division

Key Idea **Inverse operations** are operations that "undo" each other. Just as addition and subtraction are inverse operations, multiplication and division are also inverse operations.

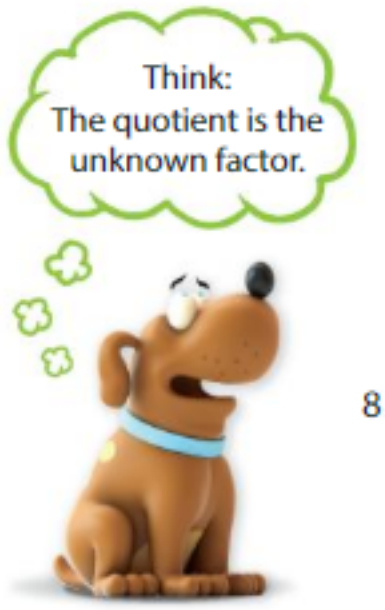
$$\underset{\text{factor}}{4} \times \underset{\text{factor}}{7} = \underset{\text{product}}{28} \qquad \underset{\text{dividend}}{28} \div \underset{\text{divisor}}{4} = \underset{\text{quotient}}{7}$$

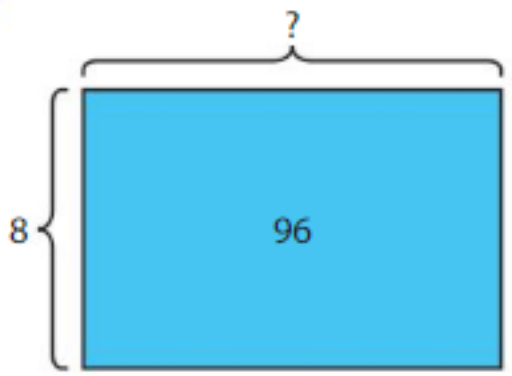
Example Find $96 \div 8$.

Write a related multiplication equation for $96 \div 8$.

$96 \div 8 = ?$ Division equation

$8 \times ? = 96$ Related multiplication equation

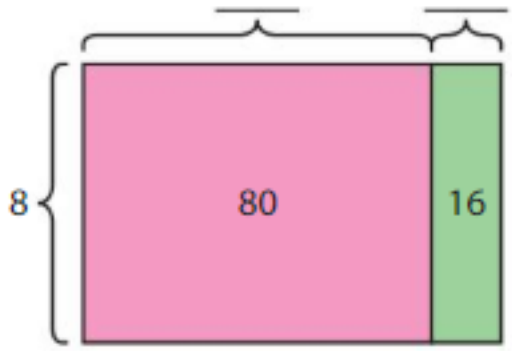




Divide the rectangle into smaller areas. Use numbers that are easier to calculate.

$96 = \quad 80 \quad + \quad 16$

$96 = (8 \times \_\_\_\_) + (8 \times \_\_\_\_)$



Find the sum of the unknown factors of the smaller areas: ____ + ____ = ____.

The related multiplication equation is $8 \times$ ____ $= 96$. So, $96 \div 8 =$ ____.

Show and Grow

Use multiplication to find the quotient.

1. $68 \div 4 =$ ____



2. $138 \div 6 =$ ____

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Name _____

Apply and Grow: Practice

Use multiplication to find the quotient.

3. $24 \div 2 =$ _____

4. $48 \div 3 =$ _____

5. $98 \div 7 =$ _____

6. $125 \div 5 =$ _____

7. $243 \div 9 =$ _____

8. $132 \div 4 =$ _____

9. MP **Structure** Draw two different ways to divide the rectangle for $112 \div 8$. Write each product using the Distributive Property.

MP **Number Sense** Compare.

10. $90 \div 6 \bigcirc 80 \div 5$

11. $405 \div 9 \bigcirc 315 \div 7$

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Think and Grow: Modeling Real Life

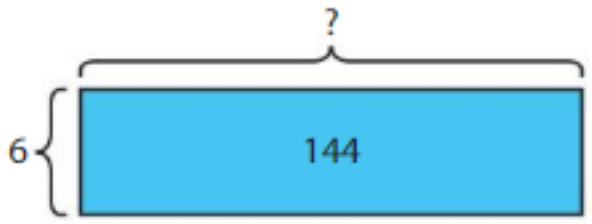


Example An employee has 4 boxes with 36 sticky hands in each box. He divides the sticky hands equally among 6 vending machines. How many sticky hands are in each vending machine?

Multiply the number of boxes by the number of sticky hands in each box to find the total number of sticky hands.

$$\begin{array}{r} 36 \\ \times\ 4 \\ \hline \end{array}$$

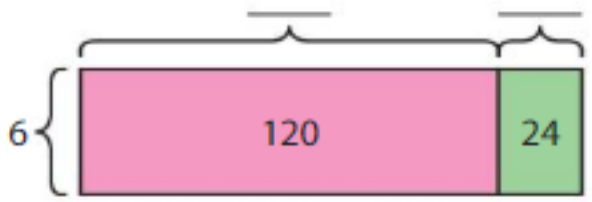
Divide the total number of sticky hands by the number of vending machines to find the number of sticky hands in each vending machine.



$144 \div 6 = ?$ Division equation

$6 \times ? = 144$ Related multiplication equation

Divide the rectangle into smaller areas.



$144 = \quad 120 \quad + \quad 24$

$144 = (6 \times \_\_\_\_) + (6 \times \_\_\_\_)$

Find the sum of the unknown factors of the smaller areas:

$\_\_\_\_ + \_\_\_\_ = \_\_\_\_.$

The related multiplication equation is $6 \times \_\_\_\_ = 144$.

So, $144 \div 6 = \_\_\_\_$.

There are _____ sticky hands in each vending machine.

Show and Grow

12. There are 6 fifth-grade classes with 21 students in each class. The students are divided equally into 7 groups. How many students are in each group?

13. Newton makes 11 clay bowls each month for 1 year. He takes an equal number of bowls to each of 3 craft fairs. How many bowls does Newton take to each craft fair?

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Name _____

Homework & Practice 6.1

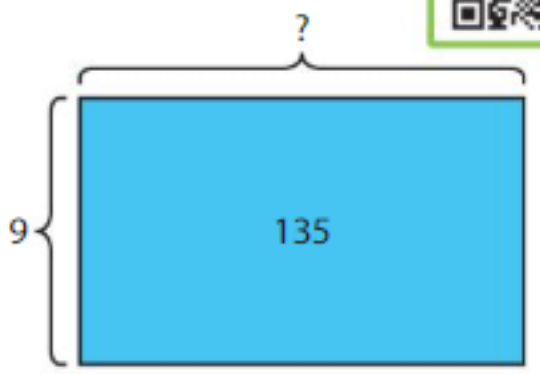
Learning Target: Use multiplication to divide.

Example Find 135 ÷ 9.

Write a related multiplication equation for 135 ÷ 9.

135 ÷ 9 = ? Division equation

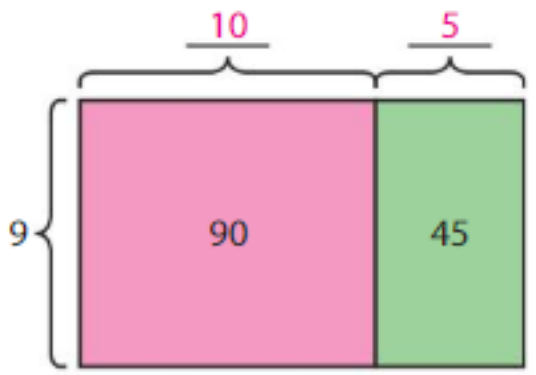
9 × ? = 135 Related multiplication equation



Divide the rectangle into smaller areas.
Use numbers that are easier to calculate.

135 = 90 + 45

135 = (9 × 10) + (9 × 5)



Find the sum of the unknown factors of the smaller areas: 10 + 5 = 15 .

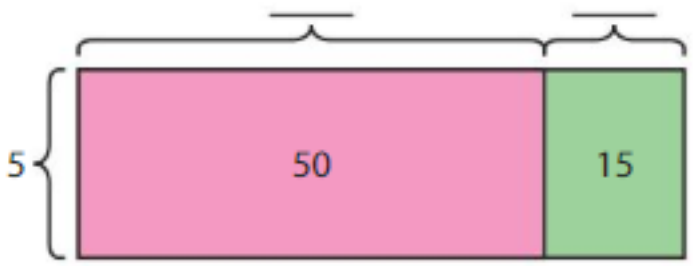
The related multiplication equation is 9 × 15 = 135. So, 135 ÷ 9 = 15 .

Use multiplication to find the quotient.

1. 36 ÷ 2 = _____



2. 65 ÷ 5 = _____



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Use multiplication to find the quotient.

3. $57 \div 3 =$ _____

4. $64 \div 4 =$ _____

5. $207 \div 9 =$ _____

6. $147 \div 7 =$ _____

7. **YOU BE THE TEACHER** Your friend finds $192 \div 6$ by writing $(6 \times 30) + (6 \times 2)$. She says the quotient is 12. Is your friend correct? Explain.

8. **Writing** Explain how you can use multiplication to solve a division problem.

9. **Modeling Real Life** A music teacher has 6 fifth-grade classes with 16 students in each class. She places the students into 4 equal rows for a chorus concert. How many students are in each row?

10. **Modeling Real Life** You win 50 tickets, 12 tickets, and 16 tickets at an arcade. You are able to buy 3 of the same item with no tickets left over. How many tickets does 1 item cost?



Review & Refresh

Find the product. Check whether your answer is reasonable.

11. $31.4 \times 9.2 =$ _____

12. $67.3 \times 4.2 =$ _____

13. $0.8 \times 5.98 =$ _____

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Name _____

Division Patterns 6.2

Learning Target: Use place value and division facts to find quotients.

Success Criteria:

- I can divide a multiple of ten, one hundred, or one thousand by a one-digit number.
- I can divide a multiple of ten, one hundred, or one thousand by a multiple of ten.
- I can explain how to use place value and division facts to divide tens, hundreds, or thousands.

FLORIDA STANDARDS
MAFS.5.NBT.2.6

Explore and Grow

Use any strategy to find each missing factor. Then write a related division equation.

____ × 3 = 15	____ × 3 = 150	____ × 3 = 1,500
____ × 30 = 150	____ × 30 = 1,500	____ × 30 = 15,000

What pattern do you notice?

MP **Repeated Reasoning** Explain how finding 35 ÷ 7 can help you find 350 ÷ 70.

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Think and Grow: Division Patterns

You can use place value and basic division facts to divide tens,hundreds, or thousands by one-digit numbers or multiples of ten.

Example Find 6,300 ÷ 7.

Think: 63 ÷ 7 = _____ Division fact

6,300 ÷ 7 = _____ hundreds ÷ 7 Use place value.

= _____ hundreds Divide.

= _____

So, 6,300 ÷ 7 = _____.

Because multiplication and division are inverse operations, you can use multiplication to check your answer.



Example Find 1,200 ÷ 40.

Think: 12 ÷ 4 = _____ Division fact

120 ÷ 40 = 12 tens ÷ 4 tens = _____ Use place value.

1,200 ÷ 40 = 120 tens ÷ 4 tens = _____

So, 1,200 ÷ 40 = _____.

You can write 1,200 as 12 hundreds or 120 tens. Because the divisor is 40, write 1,200 as 120 tens.



Show and Grow

Find the quotient.

1. 2,500 ÷ 5 = _____

Think: _____ ÷ _____ = _____

2. 420 ÷ 60 = _____

Think: _____ ÷ _____ = _____

3. 5,400 ÷ 90 = _____

4. 8,000 ÷ 20 = _____

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Name _____

Apply and Grow: Practice

Find the quotient.

5. 800 ÷ 4 = _____

6. 120 ÷ 60 = _____

7. 5,600 ÷ 7 = _____

8. 300 ÷ 50 = _____

9. 8,100 ÷ 90 = _____

10. 3,000 ÷ 30 = _____

11. 1,000 divided by 20 is _____.

12. 900 divided by 10 is _____.

13. 1,800 divided by 60 is _____.

Find the missing number.

14. _____ ÷ 40 = 8

15. 360 ÷ _____ = 6

16. 7,200 ÷ _____ = 90

Compare.

17. 28 tens ÷ 7 tens ◯ 28 ÷ 7

18. 2,700 ÷ 90 ◯ 24 tens ÷ 8 tens

19. A jeweler has 600 rings. He displays 20 rings in each ring cushion. How many ring cushions does he use?

20. **Writing** Explain how to use 45 ÷ 9 to find 4,500 ÷ 90.

21. MP **Number Sense** Which number cards have a quotient of 70?

2,800 ÷ 40	2,800 ÷ 4	280 ÷ 40	280 ÷ 4

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Think and Grow: Modeling Real Life



Example A blue whale's heart beats once every 10 seconds. How many times does the blue whale's heart beat in 1 hour?

Think: How many seconds are in 1 hour?

There are 60 seconds in 1 minute, and 60 minutes in 1 hour.
So, multiply 60 by 60 to find how many seconds are in 1 hour.

$60 \times 60 = 3{,}600$

Divide 3,600 by 10 to find how many times the blue whale's heart beats in 1 hour.

Think: $36 \div 1 =$ _____ Division fact

$360 \div 10 = 36$ tens $\div 1$ ten = _____ Use place value.

$3{,}600 \div 10 = 360$ tens $\div 1$ ten = _____

So, the blue whale's heart beats _____ times in 1 hour.

Show and Grow

22. A box of tennis balls weighs 3 kilograms. Each tennis ball weighs about 60 grams. How many tennis balls are in the box?



23. **DIG DEEPER!** An automated teller machine, or ATM, has only $20 bills. At the start of the day, it has $10,000. One hundred eighty $20 bills are withdrawn throughout the day. How many $20 bills does the ATM have left?



24. **DIG DEEPER!** A cargo van can hold up to 2 tons. The driver weighs 200 pounds. He needs to transport as many 50-pound bags of dog food as possible. How many bags of dog food can the van hold?



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Name _____

Homework & Practice 6.2

Learning Target: Use place value and division facts to find quotients.

Example Find 3,500 ÷ 70.

Think: 35 ÷ 7 = 5 — Division fact

350 ÷ 70 = 35 tens ÷ 7 tens = 5 — Use place value.

3,500 ÷ 70 = 350 tens ÷ 7 tens = 50

So, 3,500 ÷ 70 = 50.

Find the quotient.

1. 180 ÷ 2 = _____

Think: _____ ÷ _____ = _____

2. 4,200 ÷ 70 = _____

Think: _____ ÷ _____ = _____

3. 4,000 ÷ 5 = _____

4. 270 ÷ 30 = _____

5. 2,400 ÷ 60 = _____

6. 200 divided by 40 is _____.

7. 400 divided by 20 is _____.

8. 2,100 divided by 70 is _____.

Find the missing number.

9. 2,400 ÷ _____ = 30

10. _____ ÷ 60 = 50

11. 700 ÷ _____ = 70

Compare.

12. 45 hundreds ÷ 9 ◯ 450 ÷ 90

13. 3,600 ÷ 60 ◯ 140 ÷ 2

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14. The elevator to the Top of the Rock Observation Deck in New York City travels 1,200 feet each minute. How many feet does the elevator travel each second?



15. MP **Reasoning** Why is 640 ÷ 80 equal to 64 ÷ 8?

16. **Modeling Real Life** A black bear in a zoo eats 8 kilograms of food each day. He eats 4 equal-sized meals each day. How many grams of food are in each meal?

17. DIG DEEPER! How many times faster does a grizzly bear's heart beat each minute outside of hibernation than during hibernation?

	Grizzly Bear Heartbeats	
	Each Hour	**Each Minute**
Outside of Hibernation	2,400	
During Hibernation	480	

Review & Refresh

Compare.

18. 7.829 ◯ 7.851

19. 0.65 ◯ 0.650

20. 2.816 ◯ 2.814

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Name _____

Estimate Quotients 6.3

Learning Target: Use division facts and compatible numbers to estimate quotients.

Success Criteria:

- I can use division facts and compatible numbers to estimate a quotient.
- I can find two estimates that a quotient is between.

FLORIDA STANDARDS
MAFS.5.NBT.2.6

Explore and Grow

Complete the table. Explain how you can use the table to estimate 154 ÷ 20.

1 × 20 = _____	6 × 20 = _____
2 × 20 = _____	7 × 20 = _____
3 × 20 = _____	8 × 20 = _____
4 × 20 = _____	9 × 20 = _____
5 × 20 = _____	10 × 20 = _____

154 ÷ 20 is about _____.

MP **Reasoning** Why did you choose your estimate? Compare your results with your partner's.

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Think and Grow: Estimate Quotients

You can use division facts and compatible numbers to estimate a quotient.

Example Estimate 4,139 ÷ 6.

Look at the first two digits of the dividend and use basic division facts.

Think: What numbers close to 4,139 are easily divided by 6?

Use 3,600. 36 ÷ 6 = _____, so 3,600 ÷ 6 = _____.

Use 4,200. 42 ÷ 6 = _____, so 4,200 ÷ 6 = _____.

Choose 4,200 because 4,139 is closer to 4,200.

So, 4,139 ÷ 6 is about _____.

Compatible numbers are numbers that are easy to divide and are close to the actual numbers.



Example Estimate 2,805 ÷ 30.

Think: What numbers close to 2,805 are easily divided by 30?

Use 2,700. 27 ÷ 3 = _____

270 ÷ 30 = _____

2,700 ÷ 30 = _____

Use 3,000. 30 ÷ 3 = _____

300 ÷ 30 = _____

3,000 ÷ 30 = _____

Choose 2,700 because 2,805 is closer to 2,700.

So, 2,805 ÷ 30 is about _____.

Show and Grow

Find two numbers that the quotient is between.

1. 5,482 ÷ 7

4,900 ÷ 7 = _____

5,600 ÷ 7 = _____

2. 176 ÷ 52

150 ÷ 50 = _____

200 ÷ 50 = _____

3. 2,620 ÷ 67

Estimate the quotient.

4. 1,471 ÷ 5

5. 280 ÷ 41

6. 4,750 ÷ 88

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Name _____

Apply and Grow: Practice

Estimate the quotient.

7. $557 \div 6$

8. $3{,}231 \div 5$

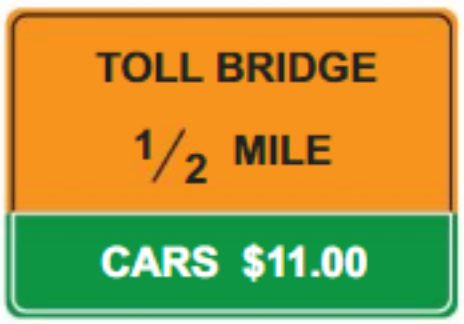
9. $896 \div 11$

10. $39\overline{)7{,}610}$

11. $94\overline{)6{,}287}$

12. $79\overline{)6{,}297}$

13. In 1 hour, toll bridge attendants collect $4,873 from cars. About how many cars cross the bridge that hour?



14. MP **Reasoning** Newton has $415 to spend during a 15-day trip. He does not want to run out of money, so he plans to spend about the same amount each day. He estimates that the amount he can spend each day is $\$450 \div 15 = \$30$ or $\$300 \div 15 = \$20$. Which estimate should he choose? Explain.

15. **Writing** Without calculating, explain how you know whether the quotient of 176 and 62 is closer to 2 or 3.

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Think and Grow: Modeling Real Life

Example The Eiffel Tower is about 2 times as tall as the Washington Monument. About how tall is the Washington Monument?



Because the Eiffel Tower is about 2 times as tall as the Washington Monument, estimate 1,063 ÷ 2.

Think: What numbers close to 1,063 are easily divided by 2?

Use 1,000. $10 \div 2 =$ _____, so $1{,}000 \div 2 =$ _____.

Use 1,200. $12 \div 2 =$ _____, so $1{,}200 \div 2 =$ _____.

Choose 1,000 because 1,063 is closer to 1,000.

So, the Washington Monument is about _____ feet tall.

Show and Grow

16. The Pacific Crest Trail is 2,650 miles long. It is about 7 times as long as the Bigfoot Trail. About how long is the Bigfoot Trail?



17. A family spends $2,473 each year for cell phone service. About how much does the family spend each month for cell phone service?

18. DIG DEEPER! You have 31 days to read a book with 138 pages and another book with 160 pages. You want to read an equal number of pages each day. About how many pages do you read each day?

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Name _____

Homework & Practice 6.3

Learning Target: Use division facts and compatible numbers to estimate quotients.

Example Estimate 3,685 ÷ 70.

Think: What numbers close to 3,685 are easily divided by 70?

Use 3,500. 35 ÷ 7 = 5

350 ÷ 70 = 5

3,500 ÷ 70 = 50

Use 4,200. 42 ÷ 7 = 6

420 ÷ 70 = 6

4,200 ÷ 70 = 60

Choose 3,500 because 3,685 is closer to 3,500.

So, 3,685 ÷ 70 is about 50.

Find two numbers that the quotient is between.

1. 1,306 ÷ 3

1,200 ÷ 3 = _____

1,500 ÷ 3 = _____

2. 435 ÷ 80

400 ÷ 80 = _____

480 ÷ 80 = _____

3. 5,691 ÷ 68

Estimate the quotient.

4. 2,506 ÷ 2

5. 4,392 ÷ 88

6. 2,416 ÷ 6

7. $52\overline{)386}$

8. $21\overline{)1{,}495}$

9. $43\overline{)3{,}509}$

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10. The length of 1 year on Uranus is a little more than 84 years on Earth. About how many Uranus years are equal to 175 Earth years?



11. **YOU BE THE TEACHER** Your friend finds the quotient. Estimate to check whether your friend's answer is reasonable.

$1{,}444 \div 76 \stackrel{?}{=} 19$

12. **Reasoning** A florist has 336 roses and 28 vases. He wants to determine how many flowers he can put into each vase without any left over. Should he use an estimate or an exact answer? Explain.

13. **Modeling Real Life** A train ride from Chicago to Emeryville, California, is 2,438 miles. It is about 8 times as long as a train ride from Chicago to Port Huron, Michigan. About how long is the train ride from Chicago to Port Huron?

14. **Modeling Real Life** You are reading a book that has 784 pages. You have 18 days to read the entire book. About how many pages should you read each day?

Review & Refresh

Write the decimal as a fraction.

15. 0.61

16. 0.084

17. 0.709

18. 0.5

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Name _____

Divide by One-Digit Numbers 6.4

Learning Target: Divide multi-digit numbers by one-digit numbers.

Success Criteria:

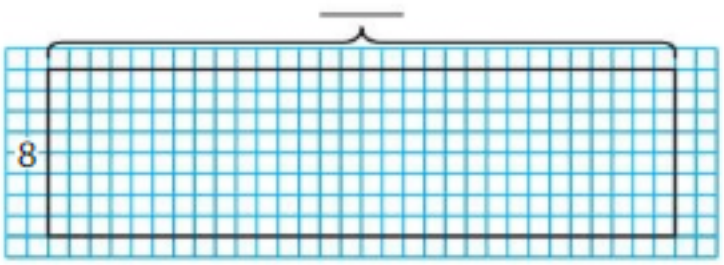
- I can use place value to divide.
- I can show how to regroup when necessary.
- I can find a quotient and a remainder.

FLORIDA STANDARDS
MAFS.5.NBT.2.6

Explore and Grow

Complete all three models to find 248 ÷ 8.

Area Model



Division

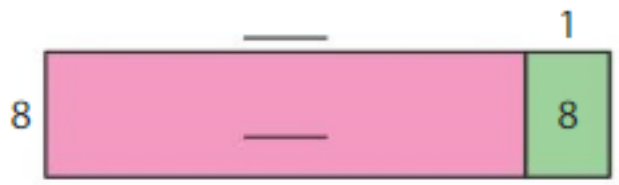
$$\begin{array}{r|l} 8 & 248 \\ -\ 240 & = 8 \times 30 \\ \hline \square & \\ -\ \square & = 8 \times 1 \\ \hline \square & \end{array}$$

30

\+ 1

So, 248 ÷ 8 = ☐.

Partial Quotients Model



Area = ____ square units

MP **Structure** How would the models be the same for 3,069 ÷ 5? How would they be different?

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Think and Grow: Divide by One-Digit Numbers

Example Find 3,069 ÷ 5.

Estimate _____

Regroup 3 thousands as 30 hundreds. Divide the hundreds.

```
   6
5)3,069
 − 30
    0
```

30 hundreds ÷ 5
6 hundreds × 5
30 hundreds − 30 hundreds
There are 0 hundreds left over.

Divide the tens.

```
   61
5)3,069
 − 30↓
    06
  − 5
    1
```

6 tens ÷ 5
1 ten × 5
6 tens − 5 tens
There is 1 ten left over.

Divide the ones.

```
   613
5)3,069
 − 30
    06
  − 5
    19
  − 15
     4
```

19 ones ÷ 5
3 ones × 5
19 ones − 15 ones
There are 4 ones left over.

So, 3,069 ÷ 5 = _____ R _____.

Check: Because _____ R _____ is close to the estimate, the answer is reasonable.

Show and Grow

Divide. Then check your answer.

1. 7)786

2. 4)3,212

3. 6)1,759

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Name _____

Apply and Grow: Practice

Divide. Then check your answer.

4. $3\overline{)4{,}185}$

5. $6\overline{)730}$

6. $8\overline{)7{,}106}$

7. $824 \div 4 =$ _____

8. $4{,}526 \div 2 =$ _____

9. $9{,}364 \div 9 =$ _____

10. Your cousin babysits for 5 days and earns a total of $375. How much money does your cousin earn each day?

11. MP **Number Sense** Without calculating, determine whether you place the first digit of the quotient in the hundreds place or the thousands place. Explain.

$6{,}529 \div 8$

12. DIG DEEPER! Complete the multiplication problem to check the division work. Then use the word cards to label each part of the multiplication problem.

$$\begin{array}{r} 74 \text{ R2} \\ 7\overline{)520} \\ -\ 49\downarrow \\ \hline 30 \\ -\ 28 \\ \hline 2 \end{array}$$

Check:

$$\begin{array}{r} \square \\ \times\ \square \\ \hline \square \\ +\ \square \\ \hline \square\ \checkmark \end{array}$$

dividend

divisor

quotient

remainder

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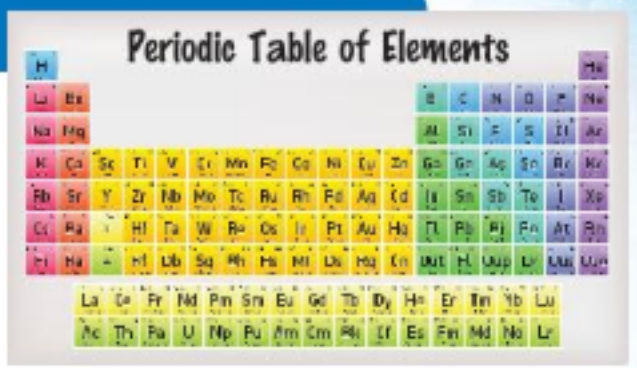
Think and Grow: Modeling Real Life



Example There are 118 elements in the periodic table. There are 6 groups of students in a class. Each group is assigned about the same number of elements to study. How many elements does each group study?

Divide 118 by 6 to find how many elements each group studies.

$$\begin{array}{r} 19 \text{ R } \_\_\_\_ \\ 6\overline{)118} \\ -\ 6\downarrow \\ \hline 58 \\ -\ 54 \\ \hline 4 \end{array}$$

11 tens ÷ 6

58 ones ÷ 6

118 ÷ 6 = ____ R ____

Interpret the quotient and the remainder.

The quotient is ____. So, each group studies at least ____ elements.

The remainder is ____. There are ____ elements not assigned to a group.

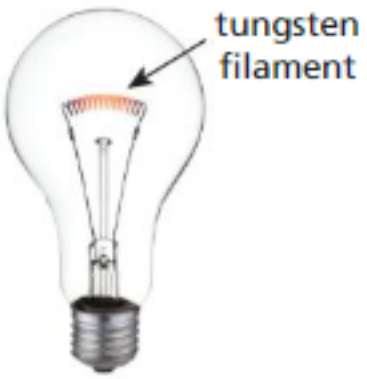
So, ____ groups must study 1 more element.

Subtract to find how many groups study 19 elements. 6 − ____ = ____

So, 2 groups study ____ elements and 4 groups study ____ elements.

Show and Grow

13. A total of 243 students take a field trip on 5 buses. Each bus must have about the same number of students. How many students must ride on each bus?



Tungsten is commonly used in lightbulbs because it is the element with the greatest boiling point.

14. DIG DEEPER! The boiling point of tungsten is 5,660 degrees Celsius. This is 160 degrees hotter than 2 times the boiling point of iron. What is the boiling point of iron?

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Name _____

Homework & Practice 6.4

Learning Target: Divide multi-digit numbers by one-digit numbers.

Example Find 4,262 ÷ 6.

Regroup 4 thousands as 40 hundreds and combine with 2 hundreds.
Divide the hundreds.

Divide the tens.

Divide the ones.

$$\begin{array}{r} \boxed{710} \text{ R } \underline{\ 2\ } \\ 6\overline{)4{,}262} \\ -\ \boxed{42} \\ \hline 06 \\ -\ \boxed{6} \\ \hline 02 \\ -\ \boxed{0} \\ \hline \boxed{2} \end{array}$$

So, 4,262 ÷ 6 = 710 R 2 .

Use multiplication to check your answer.

$$\begin{array}{rl} \boxed{710} & \leftarrow \text{quotient} \\ \times\ \ 6 & \leftarrow \text{divisor} \\ \hline \boxed{4{,}260} & \\ +\ \boxed{\ \ 2} & \leftarrow \text{remainder} \\ \hline \boxed{4{,}262}\ \checkmark & \leftarrow \text{dividend} \end{array}$$

Divide. Then check your answer.

1. $6\overline{)834}$

2. $4\overline{)881}$

3. $2\overline{)4{,}135}$

4. 215 ÷ 7 = _____

5. 6,517 ÷ 4 = _____

6. 3,155 ÷ 5 = _____

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7. Your friend makes care packages with 9 items in each package. She has 1,350 items. How many care packages can she make?

8. **Number Sense** What is the dividend when the divisor is 8 and the quotient is 96 with remainder 3? Explain how you found the dividend.

9. **Reasoning** Your friend says the quotient of 3,627 and 9 is 43. Is your friend's answer reasonable? Explain.

10. **DIG DEEPER!** Choose two numbers to write a division expression that has the greatest quotient. Then evaluate.

5,004	2
2,400	6
6,378	3

11. **Modeling Real Life** A principal invites 138 students to a reward breakfast. Nine students sit at each table. How many tables are there?

12. **Modeling Real Life** A class makes origami cubes. Each cube requires 6 sheets of paper. The class makes as many cubes as possible with 550 sheets of paper. How many more sheets of paper does the class need to make one more cube?



Review & Refresh

Estimate the product.

13. 0.9×82

14. 36×2.71

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Name _____

Use Partial Quotients to Divide by Two-Digit Numbers

6.5

Learning Target: Use an area model and partial quotients to divide.

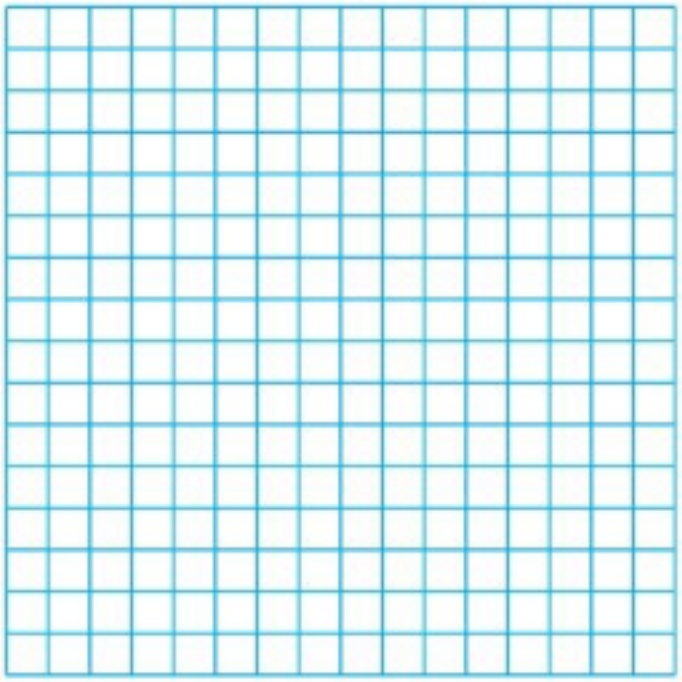
Success Criteria:

- I can explain how to use an area model to divide.
- I can write partial quotients for a division problem.
- I can add the partial quotients to find a quotient.

FLORIDA STANDARDS
MAFS.5.NBT.2.6

Explore and Grow

How can you use an area model to find 168 ÷ 14?



MP **Reasoning** Explain how your model shows the quotient.

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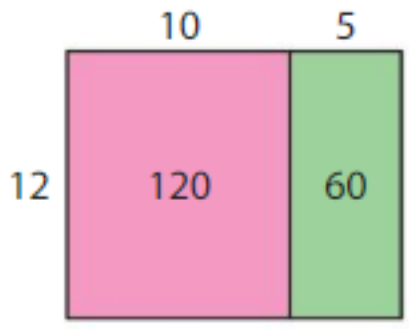
Think and Grow: Use Partial Quotients to Divide

Example Use an area model and partial quotients to find 180 ÷ 12.

$$\begin{array}{r|l} 12\overline{)180} & \text{Partial Quotients} \\ -\ 120 = 12 \times 10 & 10 \\ \hline 60 & \\ -\ 60 = 12 \times 5 & +\ 5 \\ \hline 0 & \square \end{array}$$

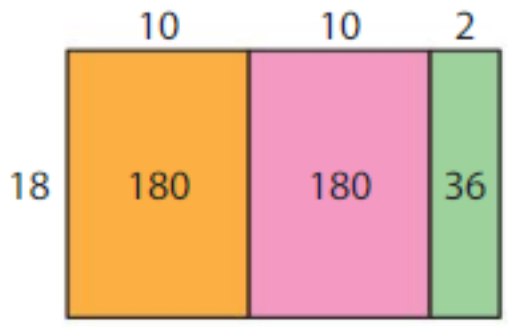


Area = 180 square units

So, 180 ÷ 12 = _____.

Example Use an area model and partial quotients to find 396 ÷ 18.

$$\begin{array}{r|l} 18\overline{)396} & \text{Partial Quotients} \\ -\ 180 = 18 \times 10 & 10 \\ \hline 216 & \\ -\ 180 = 18 \times 10 & 10 \\ \hline 36 & \\ -\ 36 = 18 \times 2 & +\ 2 \\ \hline 0 & \square \end{array}$$



Area = 396 square units

So, 396 ÷ 18 = _____.

Show and Grow

Use an area model and partial quotients to divide.

1. 176 ÷ 16 = _____

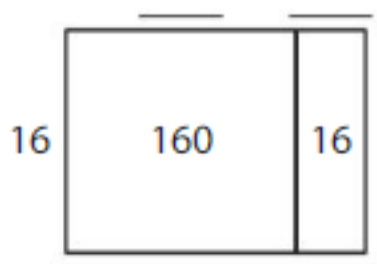
$$16\overline{)176}$$

$$-\ 160 = 16 \times \_\_\_\_ \qquad \square$$

$$\square$$

$$-\ 16 = 16 \times \_\_\_\_ \qquad +\ \square$$

$$\square \qquad\qquad \square$$



2. 182 ÷ 13 = _____

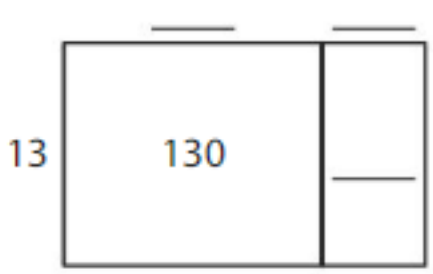
$$13\overline{)182}$$

$$-\ \square = 13 \times \_\_\_\_ \qquad \square$$

$$\square$$

$$-\ \square = 13 \times \_\_\_\_ \qquad +\ \square$$

$$\square \qquad\qquad \square$$



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Name _____

Apply and Grow: Practice

Use an area model and partial quotients to divide.

3. 154 ÷ 14 = _____

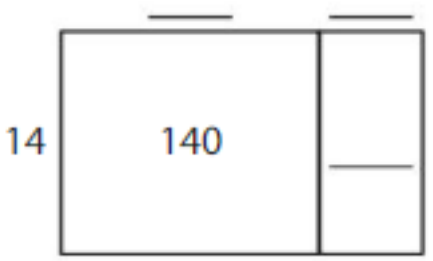
$14\overline{)154}$

$-$ ☐ = 14 × _____ ☐

☐

$-$ ☐ = 14 × _____ $+$ ☐

☐ ☐



4. 224 ÷ 16 = _____

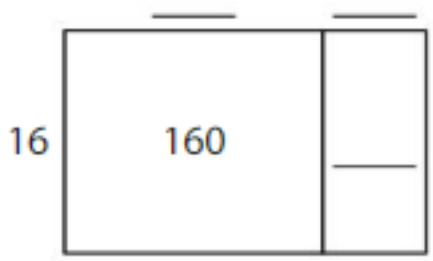
$16\overline{)224}$

$-$ ☐ = 16 × _____ ☐

☐

$-$ ☐ = 16 × _____ $+$ ☐

☐ ☐



Use partial quotients to divide.

5. 204 ÷ 17

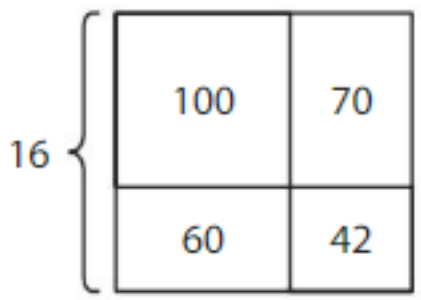
6. 225 ÷ 15

7. **Writing** Explain why there is more than one way to draw an area model to find a quotient.

8. A puma jumps 132 inches up onto a rock. How many feet does the puma jump?



9. **DIG DEEPER!** Write two related division equations represented by the model.



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Think and Grow: Modeling Real Life



Example A zookeeper cleans the rectangular floor of a baboon enclosure. The floor of the enclosure has an area of 156 square feet and a width of 12 feet. What is the length of the enclosure?

Use the area of a rectangle formula. Write the related division equation to find the length of the enclosure.

$\ell \times w = A$ Area formula

$\ell \times 12 = 156$

$156 \div 12 = \ell$

Use an area model and partial quotients to find 156 ÷ 12.

$$\begin{array}{r} 13 \\ 12\overline{)156} \\ -\ 120 = 12 \times 10 \\ \hline 36 \\ -\ 36 = 12 \times 3 \\ \hline 4 \end{array} \qquad \begin{array}{r} \boxed{} \\ +\ \boxed{} \\ \hline \boxed{} \end{array}$$

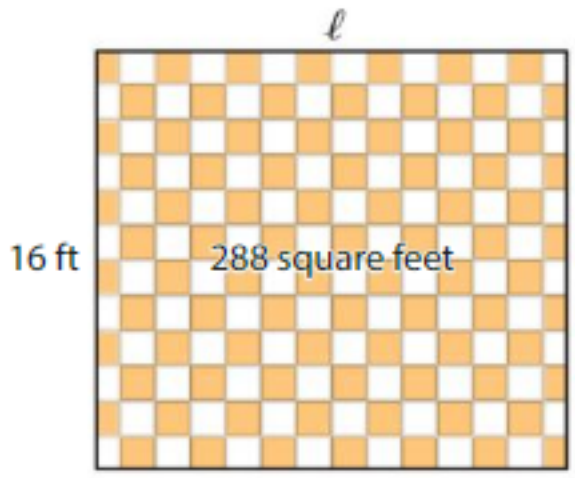


156 ÷ 12 = ____

So, the length of the enclosure is _____.

Show and Grow

10. A bakery owner tiles the rectangular floor. What is the length of the floor?



11. There are 176 fifth graders and 198 sixth graders signed up for soccer. Each soccer team has 11 players. How many more sixth-grade teams are there than fifth-grade teams?

12. **DIG DEEPER!** Newton earns $195 for working 15 hours as a radio host. How much money does Newton earn in 3 hours?

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Name _____

Homework & Practice 6.5

Learning Target: Use an area model and partial quotients to divide.

Example Use an area model and partial quotients to find 187 ÷ 11.

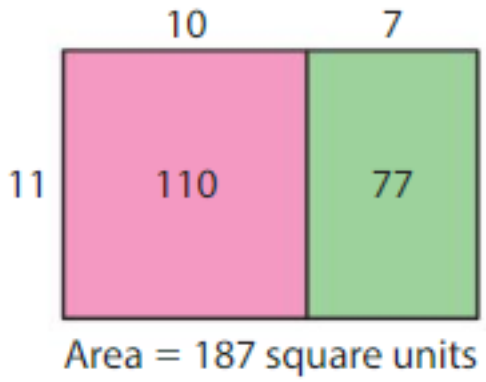
$11\overline{)187}$

$-\ 110 = 11 \times 10$ 10

77

$-\ 77 = 11 \times 7$ $+\ 7$

0 17



Area = 187 square units

So, 187 ÷ 11 = 17 .

Use an area model and partial quotients to divide.

1. 165 ÷ 11 = _____

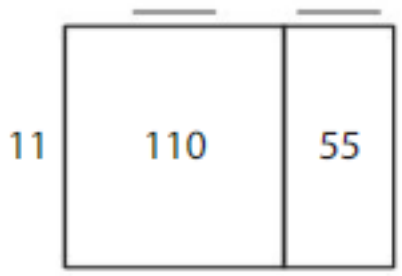
$11\overline{)165}$

$-\ 110 = 11 \times$ _____ ☐

☐

$-\ 55 = 11 \times$ _____ $+$ ☐

☐ ☐



2. 192 ÷ 12 = _____

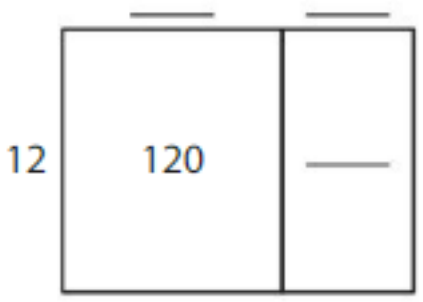
$12\overline{)192}$

$-$ ☐ $= 12 \times$ _____ ☐

☐

$-$ ☐ $= 12 \times$ _____ $+$ ☐

☐ ☐



Use partial products to divide.

3. 156 ÷ 13

4. 121 ÷ 11

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5. There are 143 players in a football league. The director divides the players into 13 teams. How many players are on each team?

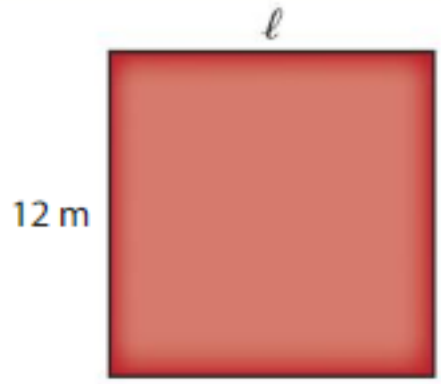
6. **Open-Ended** Write a division expression that has a 3-digit dividend, a divisor between 15 and 20, and no remainder. Use base ten blocks to find the quotient.

7. **Structure** Newton finds 506 ÷ 22. Explain how his steps change if he uses 20 as the first partial quotient.

$$
\begin{array}{rcl}
22\overline{)506} & & \\
-\ \ 220 & = 22 \times 10 & 10 \\
\hline
286 & & \\
-\ \ 220 & = 22 \times 10 & 10 \\
\hline
66 & & \\
-\ \ 66 & = 22 \times 3 & +\ 3 \\
\hline
0 & & 23
\end{array}
$$

So, 506 ÷ 22 = 23.

8. **Modeling Real Life** A rectangular Olympic gymnastics floor has an area of 144 square meters. What is the length of the floor?



9. **Modeling Real Life** A vending machine worker has 78 bags of cherry fruit snacks and 91 bags of strawberry fruit snacks. Each row of the vending machine holds 13 items from front to back. How many rows does the worker fill with fruit snacks?

Review & Refresh

Evaluate the expression.

10. 24 ÷ (6 + 2) + 14

11. 5 + 10 × 7 − 9

12. (135 + 96 + 165) × 10

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Name _____

6.6 Use Partial Quotients with a Remainder

Learning Target: Use partial quotients to divide with a remainder.

Success Criteria:

- I can use partial quotients to divide.
- I can find a remainder.

FLORIDA STANDARDS
MAFS.5.NBT.2.6

Explore and Grow

Use an area model to find 240 ÷ 15.

Can you use an area model to find 190 ÷ 15? Explain your reasoning.

MP **Construct Arguments** Explain to your partner how you know that 15 does *not* divide evenly into 190.

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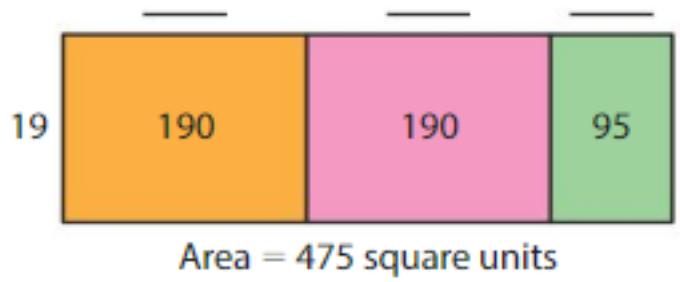
Think and Grow: Use Partial Quotients

Example Use an area model and partial quotients to find 475 ÷ 19.

Partial Quotients

$$\begin{array}{r} 19\overline{)475} \\ -\ 190 = 19 \times 10 \\ \hline 285 \\ -\ 190 = 19 \times 10 \\ \hline 95 \\ -\ 95 = 19 \times 5 \\ \hline 0 \end{array} \qquad \begin{array}{r} 10 \\ \\ 10 \\ \\ +\ 5 \\ \hline \square \end{array}$$



Area = 475 square units

So, 475 ÷ 19 = _____.

Example Use partial quotients to find 1,890 ÷ 52.

$$\begin{array}{r} 52\overline{)1{,}890} \\ -\ 1{,}040 = 52 \times 20 \\ \hline 850 \\ -\ 520 = 52 \times 10 \\ \hline 330 \\ -\ 312 = 52 \times 6 \\ \hline 18 \end{array} \qquad \begin{array}{r} \square \\ \\ \square \\ \\ +\ \square \\ \hline \square\ \text{R}\ \square \end{array}$$

Remember to continue to divide until the remainder is less than the divisor.



So, 1,890 ÷ 52 = _____ R _____.

Show and Grow

Use partial quotients to divide.

1. 523 ÷ 41 = _____ R _____

$$\begin{array}{r} 41\overline{)523} \\ -\ 410 = 41 \times \_\_\_\_ \\ \hline \square \\ -\ 82 = 41 \times \_\_\_\_ \\ \hline \square \end{array} \qquad \begin{array}{r} \square \\ \\ +\ \square \\ \hline \square\ \text{R}\ \square \end{array}$$

2. 2,760 ÷ 87 = _____ R _____

$$\begin{array}{r} 87\overline{)2{,}760} \\ -\ 1{,}740 = 87 \times \_\_\_\_ \\ \hline \square \\ -\ 870 = 87 \times \_\_\_\_ \\ \hline \square \\ -\ 87 = 87 \times \_\_\_\_ \\ \hline \square \end{array} \qquad \begin{array}{r} \square \\ \\ \square \\ \\ +\ \square \\ \hline \square\ \text{R}\ \square \end{array}$$

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Name _____

Apply and Grow: Practice

Use partial quotients to divide.

3. $28\overline{)476}$

4. $31\overline{)605}$

5. $47\overline{)1{,}833}$

6. $846 \div 93 =$ _____

7. $6{,}305 \div 65 =$ _____

8. $5{,}603 \div 72 =$ _____



9. A punching bag weighs 960 ounces. There are 16 ounces in 1 pound. What is the weight of the punching bag in pounds?

10. MP **Reasoning** Your friend wants to divide 2,561 by 34. She multiplies 34 by 100 for her first partial quotient. Is this reasonable? Explain.

11. DIG DEEPER! A division problem has 56 as its divisor. The partial quotients are 10 and 8. The remainder is 2. What is the dividend?

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Think and Grow: Modeling Real Life



Example You have 214 seeds. You want to plant all of the seeds by putting 1 seed in each section of a 12-section egg carton. How many egg cartons do you need?

Divide 214 by 12 to find how many egg cartons you need.

Use partial quotients.

$$
\begin{array}{r|l}
12\overline{)214} & \\
-\ 120 & = 12 \times 10 \quad 10 \\
\hline
94 & \\
-\ 84 & = 12 \times 7 \quad +\ 7 \\
\hline
10 & \square \text{ R } \square
\end{array}
$$

$214 \div 12 =$ _____ R _____

Interpret the quotient and the remainder.

The quotient is _____. So, _____ cartons will be full.

The remainder is _____. So, 1 carton will have _____ seeds.

So, you need _____ egg cartons.

Show and Grow

12. A screen printing shop makes 736 T-shirts. A shipping box can hold 28 T-shirts. How many boxes are needed to ship all of the T-shirts?

13. The owner of a popcorn stand makes 2,568 ounces of popcorn in 1 day. How many 64-ounce bags of popcorn can the owner fill completely?

14. DIG DEEPER! A fruit bouquet worker needs 24 strawberries, 40 grapes, 16 raspberries, and 16 blackberries to make 1 fruit bouquet. How many fruit bouquets can the worker make with the amount of fruit in stock? Explain.

Fruit	Amount in Stock
Strawberries	1,178
Grapes	1,685
Raspberries	992
Blackberries	956

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Name _____

Homework & Practice 6.6

Learning Target: Use partial quotients to divide with a remainder.

Example Use partial quotients to find 391 ÷ 15.

$15\overline{)391}$

$-\ 150 = 15 \times 10$ → 10

241

$-\ 150 = 15 \times 10$ → 10

91

$-\ 90 = 15 \times 6$ → $+\ 6$

1 → 26 R 1

So, 391 ÷ 15 = 26 R 1.

Use partial quotients to divide.

1. 426 ÷ 21 = ____ R ____

$21\overline{)426}$

$-\ 210 = 21 \times$ ____ → ☐

☐

$-\ 210 = 21 \times$ ____ → $+$ ☐

☐ → ☐ R ☐

2. 1,832 ÷ 32 = ____ R ____

$32\overline{)1{,}832}$

$-\ 1{,}600 = 32 \times$ ____ → ☐

☐

$-\ 224 = 32 \times$ ____ → $+$ ☐

☐ → ☐ R ☐

3. $16\overline{)279}$

4. $95\overline{)970}$

5. $43\overline{)2{,}451}$

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Use partial quotients to divide.

6. $504 \div 18 =$ _____

7. $3{,}740 \div 64 =$ _____

8. $9{,}261 \div 57 =$ _____



9. A teacher has 1,025 books. She places an equal number of books into each of 30 bins. How many books are in each bin?

10. MP **Number Sense** What is the greatest possible whole number remainder when you divide a number by 75? Explain.

11. MP **Structure** Solve $4{,}123 \div 78$ two different ways using partial quotients.

12. **Modeling Real Life** One study shows that American adults eat about 31 pounds of cheese each year. How many years does it take for an adult to eat 1,500 pounds of cheese?

13. **Modeling Real Life** There are 212 students and 89 teachers attending a leadership conference. One table can seat 16 people. How many tables are needed?

Review & Refresh

Estimate the product.

14. 487×92

15. 24×211

16. 49×657

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Name _____

6.7 Divide Three-Digit Numbers by Two-Digit Numbers

Learning Target: Divide three-digit numbers by two-digit numbers.

Success Criteria:

- I can use estimation to place the first digit in a quotient.
- I can use place value to divide.
- I can use estimation or multiplication to check my answer.

FLORIDA STANDARDS
MAFS.5.NBT.2.6

Explore and Grow

All of the division problems have no remainders. Which problems have one-digit quotients? Which problems have two-digit quotients? How do you know without calculating?

612 ÷ 18	344 ÷ 43	340 ÷ 68
840 ÷ 24	711 ÷ 79	407 ÷ 11

MP **Reasoning** Explain how estimation can help you determine the number of digits in a quotient.

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Think and Grow: Divide Three-Digit Numbers by Two-Digit Numbers

Example Find 368 ÷ 16. Estimate _____

Use the estimate to place the first digit in the quotient.

16)368 The first digit is in the _____ place.

Divide the tens.

```
     2
16)368
 − 32
   4
```

36 tens ÷ 16
2 tens × 16
36 tens − 32 tens
There are 4 tens left over.

Divide the ones.

```
     23
16)368
 − 32
    48
 − 48
     0
```

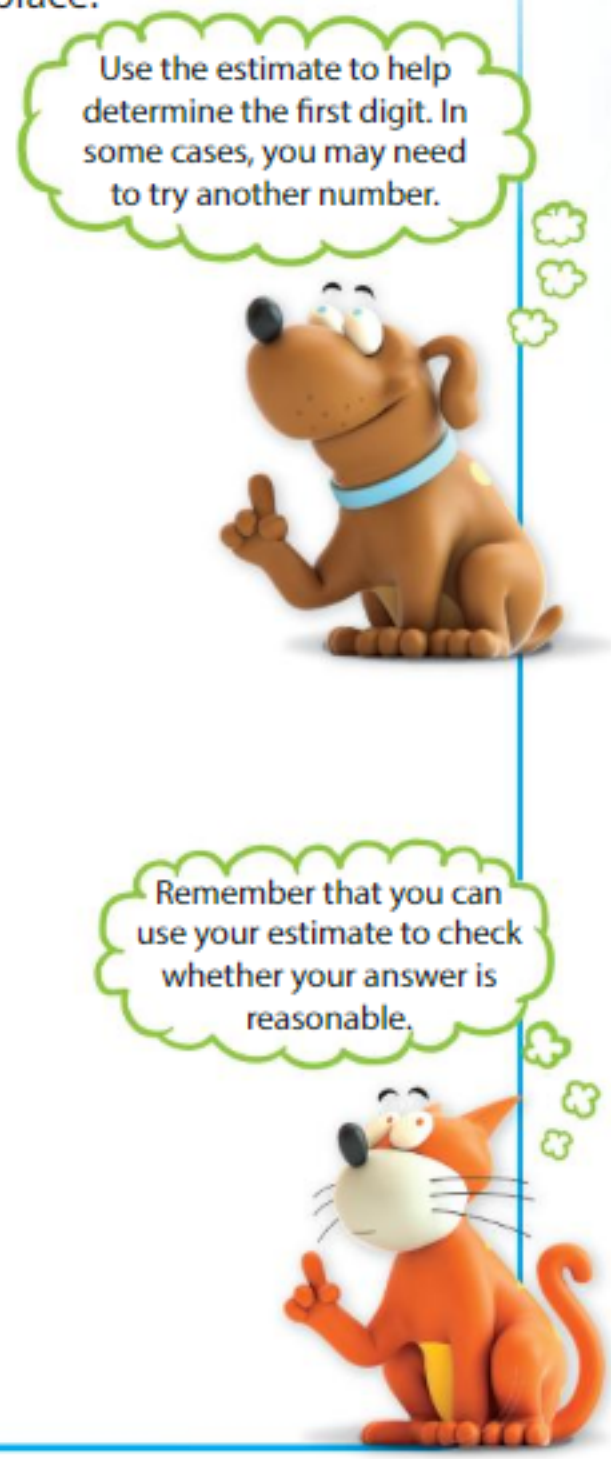
Regroup 4 tens as 40 ones and combine with 8 ones.

48 ones ÷ 16
3 ones × 16
48 ones − 48 ones
There are 0 ones left over.

So, 368 ÷ 16 = _____.

Use multiplication to check your answer.

```
   □   ← quotient
 × 16  ← divisor
   □
 + □
   □ ✓ ← dividend
```


Use the estimate to help determine the first digit. In some cases, you may need to try another number.
Remember that you can use your estimate to check whether your answer is reasonable.

Show and Grow

Divide. Then check your answer.

1. 18)612

2. 42)294

3. 30)580

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Name _____

Apply and Grow: Practice

Divide. Then check your answer.

4. $16\overline{)293}$

5. $35\overline{)375}$

6. $77\overline{)847}$

7. $564 \div 94 =$ _____

8. $998 \div 33 =$ _____

9. $702 \div 54 =$ _____

10. A period of 20 years is called a *score*. It takes about 460 years for a plastic bottle to decompose in a landfill. How many scores does it take for a plastic bottle to decompose?



11. MP **Number Sense** Can you have a remainder that is greater than the divisor?

12. MP **Structure** Find $304 \div 16$ using two different methods. Which method do you prefer? Why?

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Think and Grow: Modeling Real Life



Example Tours of a television studio have no more than 45 guests. There are 589 guests in line to tour the studio. How many tours are full?

Divide the total number of guests by the number of guests in each tour to find how many tours are full.

Divide the tens. Then divide the ones.

$589 \div 45 =$ _____ R _____

$$\begin{array}{r} \square \text{ R } \_\_\_\_ \\ 45\overline{)589} \\ -\ \square \\ \hline \square \\ -\ \square \\ \hline \square \end{array}$$

Interpret the quotient and the remainder.

The quotient is _____. So, _____ tours are full with 45 guests each.

The remainder is _____. There are _____ guests left. So, the last tour is not full and has _____ guests.

So, _____ tours are full.

Show and Grow

13. A farmer has 918 eggs to sell at a farmer's market. She packs 12 eggs in each carton. How many cartons are full?

14. Descartes makes 770 cups of apple cider. He pours 16 cups of cider into each container. How many containers does Descartes need?



15. **DIG DEEPER!** Six teachers and 144 students attend a glassblowing demonstration. An auditorium has 10 rows with 23 seats in each row. Students begin filling in the front row and do not leave any empty seats. The remaining students and teachers sit in the last row. How many students sit with the teachers?

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Name _____

Homework & Practice 6.7

Learning Target: Divide three-digit numbers by two-digit numbers.

Example Find 618 ÷ 24. Estimate $600 \div 20 = 30$

Use the estimate to place the first digit in the quotient.

24)618 The first digit is in the tens place.

Divide the tens.

$$\begin{array}{r} 2 \\ 24\overline{)618} \\ -\ 48 \\ \hline 13 \end{array}$$

Divide the ones.

$$\begin{array}{r} 25\ \text{R}\ 18 \\ 24\overline{)618} \\ -\ 48\downarrow \\ \hline 138 \\ -\ 120 \\ \hline 18 \end{array}$$

Use multiplication to check your answer.

$$\begin{array}{r} 25 \\ \times\ 24 \\ \hline 100 \\ +\ 500 \\ \hline 600 \\ +\ 18 \\ \hline 618\ \checkmark \end{array}$$

Multiply the quotient by the divisor and then add the remainder.



So, 618 ÷ 24 = 25 R 18.

Divide. Then check your answer.

1. 21)735

2. 64)802

3. 40)901

4. 486 ÷ 18 = _____

5. 266 ÷ 19 = _____

6. 284 ÷ 37 = _____

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7. A factory packages identical bags of nails into a box and ships them to a store. The store receives 960 nails in the box. How many bags of nails does the store receive?

8. **Logic** Find the missing digits.

```
        12  R13
49 ) 6 □ 1
   − 4 9
     1 1 1
   −   □ □
       1 3
```

9. **DIG DEEPER!** Change the dividend in the equation to another three-digit number so that there is no remainder.

$893 \div 61 = 14$ R39

10. **Modeling Real Life** An amusement park ride seats 12 people. There are 458 people in line. How many times does the ride run full?

11. **DIG DEEPER!** A city mayor receives 990 new garbage cans. She gives half of the garbage cans to the city's residents. She divides the rest of the cans into 16 equal groups for the city's parks and streets. How many garbage cans are left over?



Review & Refresh

12. Round 18.692.

Nearest whole number: _____

Nearest tenth: _____

Nearest hundredth: _____

13. Round 5.153.

Nearest whole number: _____

Nearest tenth: _____

Nearest hundredth: _____

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Name _____

6.8 Divide Four-Digit Numbers by Two-Digit Numbers

Learning Target: Divide four-digit numbers by two-digit numbers.

Success Criteria:

- I can use estimation to place the first digit in a quotient.
- I can use place value to divide.
- I can use estimation or multiplication to check my answer.

FLORIDA STANDARDS
MAFS.5.NBT.2.6

Explore and Grow

All of the division problems have no remainders. Which problems have two-digit quotients? Which problems have three-digit quotients? How do you know without calculating?

1,890 ÷ 18	8,200 ÷ 40	4,774 ÷ 62
6,138 ÷ 33	1,050 ÷ 25	1,995 ÷ 21

MP **Reasoning** Can a four-digit whole number divided by a two-digit whole number have a whole number quotient with four digits? Explain your reasoning.

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Think and Grow: Divide Four-Digit Numbers by Two-Digit Numbers

Example Find 3,290 ÷ 31. Estimate _____

Use the estimate to place the first digit in the quotient.

$31\overline{)3{,}290}$ The first digit is in the _____ place.

Divide the hundreds.

```
    1
31)3,290
 − 31
   1
```

32 hundreds ÷ 31
1 hundred × 31
32 hundreds − 31 hundreds
There is 1 hundred left over.

Divide the tens.

```
    10
31)3,290
 − 31
   19
```

Regroup 1 hundred as 10 tens and combine with 9 tens.
19 tens *cannot* be shared among 31 groups without regrouping.
So, place a zero in the quotient.

```
  − 0
   19
```

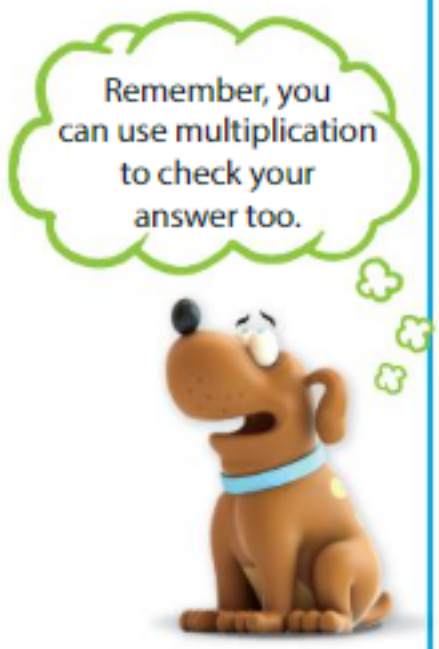
0 tens × 31
19 tens − 0 tens
There are 19 tens left over.

Divide the ones.

```
   106 R 4
31)3,290
 − 31
   19
  − 0
   190
 − 186
     4
```

Regroup 19 tens as 190 ones.

190 ones ÷ 31
6 ones × 31
190 ones − 186 ones
There are 4 ones left over.



So, 3,290 ÷ 31 = ____ R____. Reasonable? ____ R____ is close to ____. ✓

Show and Grow

Divide. Then check your answer.

1. $28\overline{)1{,}148}$

2. $13\overline{)1{,}596}$

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Name _____

Apply and Grow: Practice

Divide. Then check your answer.

3. $16\overline{)9{,}640}$

4. $26\overline{)5{,}460}$

5. $37\overline{)3{,}885}$

6. $2{,}784 \div 72 =$ _____

7. $8{,}047 \div 83 =$ _____

8. $9{,}504 \div 96 =$ _____

9. A rectangular section of the flame trench on Launch Pad 39A at NASA's Kennedy Space Center was damaged during the launch of the space shuttle *Discovery*. The area of the section damaged was 1,500 square feet. The section was 75 feet long. How wide was the section?



10. MP **Reasoning** Your friend finds $6{,}408 \div 51$ and gets an answer of 124 R 84. Explain your friend's mistake.

11. **Writing** Explain why you can use multiplication to check your answer to a division problem.

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Think and Grow: Modeling Real Life



Example The Great Barrier Reef is 2,300 kilometers long. A marine biologist studies the entire reef. He can explore no more than 75 kilometers of the reef each week. How many kilometers of the reef does the biologist explore the last week?

Divide the total length by the length he can explore each week to find how many weeks he explores the reef.

$$\begin{array}{r} \square \text{ R } \_\_\_\_ \\ 75\overline{)2{,}300} \\ -\ \square\downarrow \\ \hline 50 \\ -\ \square \\ \hline \square \end{array}$$

2,300 ÷ 75 = _____ R _____

Interpret the quotient and the remainder.

The quotient is _____. So, the biologist explores 75 kilometers of the reef each week for _____ weeks.

The remainder is _____. There are _____ kilometers left.

So, the biologist explores _____ kilometers of the reef the last week.

Show and Grow

12. A librarian has 1,048 books to shelve. Each shelf can hold 32 books. The librarian fills each shelf before moving to another shelf. How many books are on the last shelf?

13. A banker receives 2,215 nickels. A standard roll of nickels contains 40 nickels. How many standard rolls of nickels can the banker make?

14. **DIG DEEPER!** A recreation director prepares the course of a 3-mile race by posting a motivational sign every 85 yards along the course. How many signs does the director use? Explain.



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Name _____

Homework & Practice 6.8

Learning Target: Divide four-digit numbers by two-digit numbers.

Example Find 1,264 ÷ 79. Estimate 1,600 ÷ 80 = 20

Use the estimate to place the first digit in the quotient.

79)1,264 The first digit is in the tens place.

Divide the tens.

```
   1
79)1,264
 − 79
  47
```

Divide the ones.

```
   16
79)1,264
 − 79↓
  474
 − 474
    0
```

So, 1,264 ÷ 79 = 16. Reasonable? 16 is close to 20. ✓

Divide. Then check your answer.

1. 13)5,343

2. 23)3,296

3. 48)1,414

4. 3,300 ÷ 15 = _____

5. 4,592 ÷ 82 = _____

6. 8,751 ÷ 64 = _____

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7. A hot-air balloon travels 2,016 miles in 96 hours. The balloon travels the same number of miles each hour. How many miles does the balloon travel in 1 hour?

8. The area of the rectangle is 1,875 square feet. What is the width of the rectangle?



9. **Which One Doesn't Belong?** Which expression does *not* have a two-digit quotient?

1,955 ÷ 85 6,701 ÷ 36

1,699 ÷ 54 2,754 ÷ 71

10. **YOU BE THE TEACHER** Is your friend correct? Explain. Show how to check your friend's answer two different ways.

$$\begin{array}{r} 70 \text{ R30} \\ 61\overline{)4{,}300} \\ -\ 427 \\ \hline 30 \\ -\ 0 \\ \hline 30 \end{array}$$

11. **Modeling Real Life** A recycling company has 2,609 pounds of materials to sort. For efficiency, it divides all of the materials into boxes that each hold 20 pounds of materials. How many pounds of materials are in the last box?

12. **Modeling Real Life** An art museum has 1,025 paintings to divide equally among 20 rooms. How many more paintings does it need so that every room has the same number of paintings?

Review & Refresh

Find the difference. Then check your answer.

13. 145.92 − 15.78 = _____

14. 3.63 − 0.48 = _____

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Name _____

Problem Solving: Division 6.9

Learning Target: Solve word problems involving division of whole numbers.

Success Criteria:

- I can understand a problem.
- I can make a plan to solve.
- I can solve a problem.

FLORIDA STANDARDS

MAFS.5.NBT.2.6
MAFS.5.NF.2.3

Explore and Grow

Make a plan to solve the problem.

A mother giraffe weighs 11 times as much as a newborn giraffe. The combined weight of the giraffes is 1,800 pounds. What is the weight of each giraffe?



MP **Make Sense of Problems** How does your plan change if the combined weight of the giraffes is 1,752 pounds? Explain.

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Think and Grow: Problem Solving: Division

Example The length of an oil tanker is 15 times the length of a tugboat. The combined length of the boats is 304 meters. What is the length of each boat?

Understand the Problem

What do you know?

- The length of the oil tanker is 15 times the length of the tugboat.
- The combined length of the boats is 304 meters.

What do you need to find?

- You need to find the length of each boat.

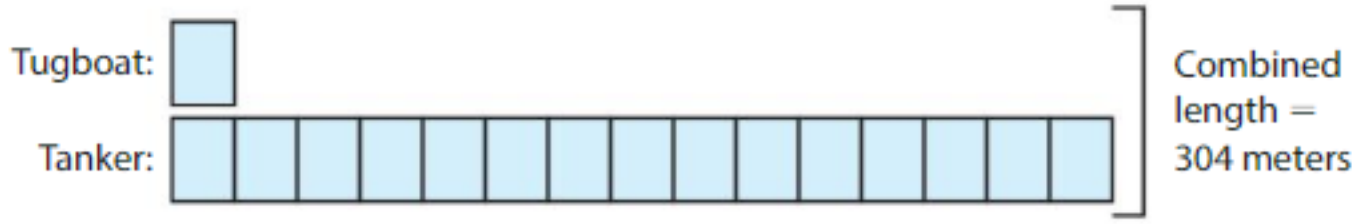
Make a Plan

How will you solve?

- Draw and use tape diagrams to help write a division problem that gives the length of the tugboat.
- Multiply the length of the tugboat by 15 to find the length of the oil tanker.

Solve

Step 1: Draw _____ part for the length of the tugboat and _____ parts for the length of the oil tanker.



Step 2: Divide to find the length of the tugboat.

$$\begin{array}{r} \square \\ 16\overline{)304} \\ -\ 16 \\ \hline \square \\ -\ \square \\ \hline \square \end{array}$$

Step 3: Multiply to find the length of the oil tanker.

$$\begin{array}{r} \square \\ \times\ 15 \\ \hline \square \\ +\ \square \\ \hline \square \end{array}$$

The tugboat is _____ meters long, and the oil tanker is _____ meters long.

Show and Grow

1. Explain how you can check your answer above.

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Name _____

Apply and Grow: Practice

Understand the problem. What do you know? What do you need to find? Explain.

2. A lion weighs 7 times as much as a leopard. The combined weight of the cats is 480 pounds. What is the weight of each cat?

3. A fifth-grade class raises $1,040 for a field trip to a museum. One admission ticket costs $8 and one lunch costs $5. How many people can attend the field trip?

Understand the problem. Then make a plan. How will you solve? Explain.

4. A photo album has 15 pages. Each page can hold 6 photographs. How many of these albums do you need for 1,025 photographs?

5. You, Newton, and Descartes play a video game. You have 5 times as many points as Newton. Descartes has 9 times as many points as Newton. You, Newton, and Descartes have 1,320 points in all. How many points do you have?

6. **DIG DEEPER!** The Amazon River is 4,000 miles long. It is 1,688 miles shorter than 3 times the length of the Rio Grande. How long is the Rio Grande?



The Amazon River is home to the pink dolphin.

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Think and Grow: Modeling Real Life



Example A chemist mixes 1,530 milliliters of a solution. The solution must be divided equally among 12 beakers. How much solution should be poured into each beaker?

Divide 1,530 by 12 to find how much can be poured into each beaker.

Interpret the quotient and the remainder.

The quotient is _____. So, _____ milliliters of solution can be poured into each beaker.

The remainder is _____. So, _____ milliliters of solution are left over.

$$\begin{array}{r} 127 \text{ R } \_\_\_\_ \\ 12\overline{)1{,}530} \\ -\ \square\downarrow \\ \hline 33\downarrow \\ -\ \square \\ \hline 90 \\ -\ \square \\ \hline \square \end{array}$$

The leftover solution can also be divided equally among the 12 beakers. The number of milliliters of leftover solution poured into each beaker can be written as a fraction.

$$\frac{\text{remainder}}{\text{divisor}} \rightarrow \frac{\square}{\square}$$

So, _____ milliliters should be poured into each beaker.

Show and Grow

7. A great white shark migrates a total of 2,210 miles in 52 days. The shark travels the same number of miles each day. How many miles does the shark travel each day?

8. Newton has 2,480 baseball cards and 1,235 football cards in his collection. He wants to put all of the cards into an album. Each page holds 18 cards. How many pages does he need for all of his cards? Explain.

9. Descartes has 6 large boxes with 48 party favors in each box and 5 small boxes with 16 party favors in each box. He puts 15 favors in each gift basket. How many baskets does he make? Explain.

10. DIG DEEPER! Write and solve a word problem involving division in which the remainder can be written as a fraction.

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Name _____

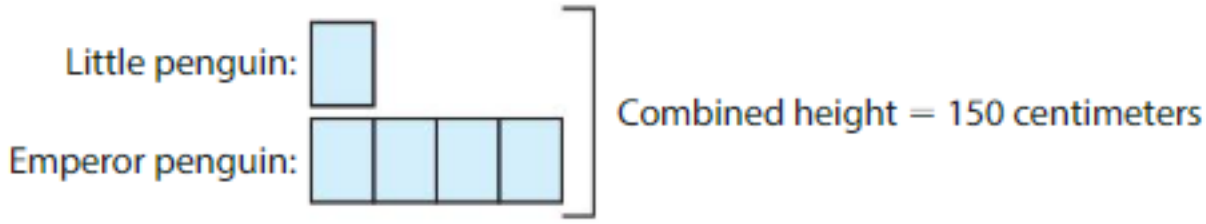
Homework & Practice 6.9

Learning Target: Solve word problems involving division of whole numbers.

Example An emperor penguin is 4 times as tall as a little penguin. The combined height of the penguins is 150 centimeters. What is the height of each penguin?

Think: What do you know? What do you need to find? How will you solve?

Step 1: Draw 1 part for the height of the little penguin and 4 parts for the height of the emperor penguin.



Step 2: Divide to find the height of the little penguin.

$$\begin{array}{r} 30 \\ 5\overline{)150} \\ -\ 15 \\ \hline -\ 00 \\ \hline 0 \\ \hline 0 \end{array}$$

Step 3: Multiply to find the height of the emperor penguin.

$$\begin{array}{r} 30 \\ \times\ \ 4 \\ \hline 0 \\ +\ 120 \\ \hline 120 \end{array}$$

The little penguin is 30 centimeters tall, and the emperor penguin is 120 centimeters tall.

Understand the problem. What do you know? What do you need to find? Explain.

1. A DVD storage tower has 8 shelves. Each shelf can display 12 DVDs. How many storage towers does a worker need to display 1,440 DVDs?

2. The Eastern Continental Trail is 15 times longer than the Erie Canalway Trail. The combined length of the hiking trails is 5,760 miles. What is the length of each hiking trail?

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Understand the problem. Then make a plan. How will you solve? Explain.

3. A runner finished a total of 1,500 kilometers in races before retiring. She finished thirty-two 15-kilometer races. The rest of her races were 10-kilometer races. How many of her races were 10-kilometer races?

4. You, Newton, and Descartes volunteer this summer. You have 2 times as many volunteer minutes as Newton. Descartes has 3 times as many volunteer minutes as Newton. You, Newton, and Descartes have 5,040 volunteer minutes altogether. How many minutes do you volunteer?

5. A factory packs boxes with glitter pens. One box can hold 36 glitter pens. The factory produces 5,982 glitter pens. The factory fills as many boxes as possible. How many glitter pens will *not* fit into the boxes?

6. **DIG DEEPER!** The Burj Khalifa in Dubai is the tallest building in the world, at 2,717 feet. It is 217 feet taller than 5 times the height that the Dubai Fountain reaches. How high does the Dubai Fountain reach?



7. **Modeling Real Life** A woodworker spends a total of 162 hours making 24 birdhouses. He spends the same amount of time on each birdhouse. How many hours does he spend on each birdhouse?

8. **Modeling Real Life** A truck driver drives 2,580 miles in 40 hours. He drives the same number of miles each hour. How many miles does he drive each hour?

Review & Refresh

Find the product.

9.
$$\begin{array}{r} 15.7 \\ \times\ 0.3 \\ \hline \end{array}$$

10.
$$\begin{array}{r} 6.24 \\ \times\ 17.9 \\ \hline \end{array}$$

11.
$$\begin{array}{r} 0.46 \\ \times\ 0.8 \\ \hline \end{array}$$

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Name _____

Performance Task 6

You are planning a family road trip to see your cousin 448 miles away.



1. Your family will drive about 55 miles each hour during the trip.

a. About how many hours will your family spend driving?

b. You plan to leave at 8:00 A.M. and make two equal-length stops. You want to reach your cousin's home by 5:30 P.M. How many minutes can you spend at each stop?

c. The roads will be under construction on the return trip home, so you will travel fewer than 55 miles each hour. Will the driving time be longer than or shorter than 8 hours? Use an example to justify your answer.

2. You want to estimate the amount of money your family will spend on gasoline during your road trip.

a. On a previous road trip, your family drove 150 miles using about 5 gallons of gasoline. About how many miles did your family drive using 1 gallon of gasoline?

b. Research the price of 1 gallon of gasoline in your area. Estimate the amount of money your family will spend on gasoline to drive to your cousin's home and back.

c. Your aunt offers to let your family borrow her hybrid car. Your aunt drives about 47 miles using 1 gallon of gasoline. About how much money will your family save on gasoline if they borrow your aunt's hybrid car for the trip?



Most hybrid cars use gasoline and electricity to generate power.

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Division Dots

Directions:

1. Players take turns connecting two dots, each using a different color.
2. On your turn, connect two dots, vertically or horizontally. If you close a square around a division problem, then find and write the quotient and the remainder. If you do not close a square, then your turn is over.
3. Continue playing until all division problems are solved.
4. The player with the most completed squares wins!

9,623 ÷ 54 _____ R ____	758 ÷ 11 _____ R ____	8,484 ÷ 21 _____ R ____	945 ÷ 15 _____ R ____
160 ÷ 38 _____ R ____	4,500 ÷ 20 _____ R ____	548 ÷ 47 _____ R ____	1,344 ÷ 48 _____ R ____
3,947 ÷ 33 _____ R ____	832 ÷ 64 _____ R ____	7,313 ÷ 71 _____ R ____	394 ÷ 27 _____ R ____
476 ÷ 53 _____ R ____	5,208 ÷ 93 _____ R ____	216 ÷ 18 _____ R ____	6,378 ÷ 24 _____ R ____

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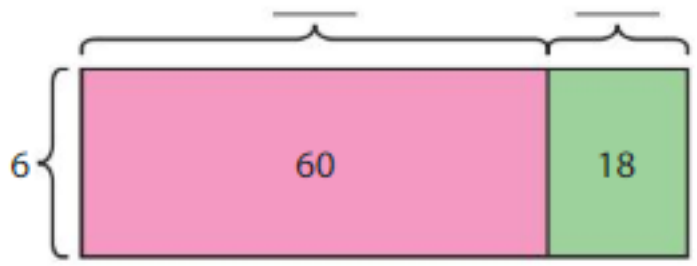
Name _____

Chapter Practice 6

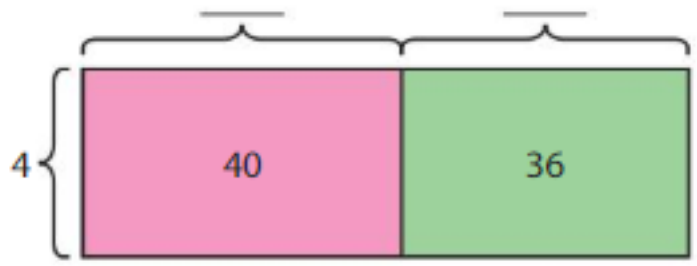
6.1 Relate Multiplication and Division

Use multiplication to find the quotient.

1. $78 \div 6 =$ _____



2. $76 \div 4 =$ _____



3. $105 \div 5 =$ _____

4. $288 \div 8 =$ _____

6.2 Division Patterns

Find the quotient.

5. $4{,}500 \div 5 =$ _____

6. $140 \div 70 =$ _____

7. $160 \div 20 =$ _____

8. $720 \div 9 =$ _____

9. $4{,}900 \div 70 =$ _____

10. $10{,}000 \div 5 =$ _____

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6.3 Estimate Quotients

Find two numbers that the quotient is between.

11. 604 ÷ 19

600 ÷ 20 = _____

800 ÷ 20 = _____

12. 1,732 ÷ 40

1,600 ÷ 40 = _____

2,000 ÷ 40 = _____

13. 4,096 ÷ 61

Estimate the quotient.

14. 3,411 ÷ 53

15. 1,678 ÷ 92

16. 6,581 ÷ 77

17. **YOU BE THE TEACHER** Your friend finds the quotient. Estimate to check whether your friend's answer is reasonable.

?
924 ÷ 22 = 24

6.4 Divide by One-Digit Numbers

Divide. Then check your answer.

18. $5\overline{)415}$

19. $6\overline{)6{,}432}$

20. $9\overline{)5{,}628}$

21. 8,021 ÷ 7 = _____

22. 817 ÷ 8 = _____

23. 3,007 ÷ 3 = _____

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6.5 Use Partial Quotients to Divide by Two-Digit Numbers

Use partial quotients to divide.

24. 156 ÷ 13

25. 208 ÷ 16

6.6 Use Partial Quotients with a Remainder

Use partial quotients to divide.

26. $50\overline{)805}$

27. $18\overline{)741}$

28. $48\overline{)2{,}500}$

29. 792 ÷ 13 = _____

30. 3,982 ÷ 25 = _____

31. 6,927 ÷ 68 = _____

32. **Modeling Real Life** There are 405 projects in a science fair. The coordinator displays the projects in rows of 42. How many rows have exactly 42 projects?

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6.7 Divide Three-Digit Numbers by Two-Digit Numbers

Divide. Then check your answer.

33. $31\overline{)961}$

34. $27\overline{)803}$

35. $19\overline{)245}$

6.8 Divide Four-Digit Numbers by Two-Digit Numbers

Divide. Then check your answer.

36. 6,636 ÷ 84 = _____

37. 2,418 ÷ 21 = _____

38. 4,960 ÷ 62 = _____

6.9 Problem Solving: Division

39. The weight of a giant panda is 10 times the weight of a red panda. The combined weight of the pandas is 220 pounds. What is the weight of each panda?



40. A company fills claw arcade machines with stuffed animals. One machine can hold 50 stuffed animals. The company has 2,357 stuffed animals. The company fills as many machines as possible. How many stuffed animals do *not* fit into the machines?

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7 Divide Decimals

- Have you ever heard of the adopt-a-highway program? What do program volunteers do?
- How can you divide a 179.8-mile-long highway into sections of equal length?

Chapter Learning Target:
Understand dividing decimals.

Chapter Success Criteria:
- I can identify a decimal.
- I can write a decimal equation.
- I can solve a problem using decimals.
- I can model different types of decimals as equations.



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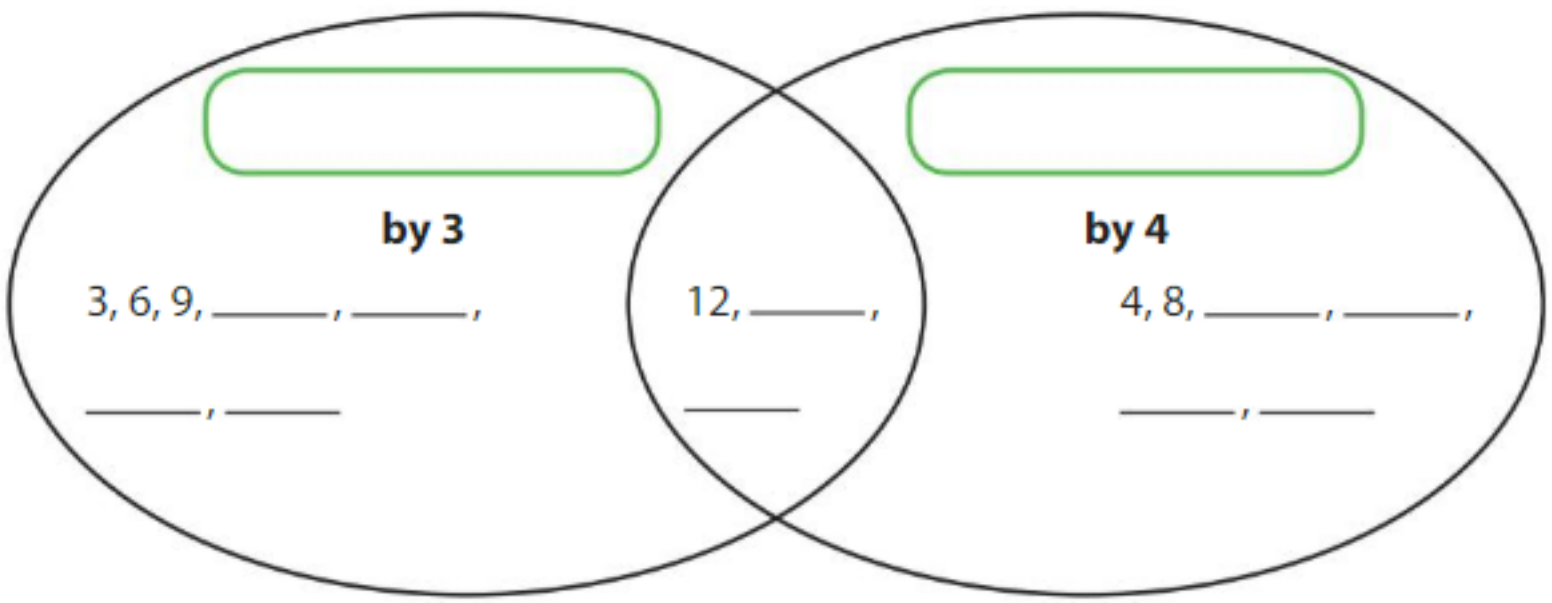
7 Vocabulary

Review Words

divisible
hundredth
tenth
thousandth

Organize It

Use a review word and whole numbers to complete the graphic organizer.



Define It

Identify the review word. Find the word in the word search.

1. 1 of 1,000 equal parts of a whole
2. 1 of 100 equal parts of a whole
3. 1 of 10 equal parts of a whole

B	H	P	R	M	A	H	L	H	H
S	D	U	N	Q	J	E	U	T	Y
U	L	K	W	D	U	I	D	D	P
N	C	T	S	G	M	N	L	E	O
A	H	I	F	D	A	O	P	R	C
D	J	R	N	S	R	K	S	D	R
T	E	A	U	V	E	T	H	N	W
Z	U	O	F	R	L	U	Y	U	B
O	H	G	D	T	E	N	T	H	C
T	R	N	E	M	S	H	N	A	R

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Name _____

7.1 Division Patterns with Decimals

Learning Target: Find quotients involving decimals and powers of 10.

Success Criteria:

- I can explain how to divide a number by a power of 10.
- I can explain patterns in the placement of the decimal point when dividing a decimal by a power of 10.

FLORIDA STANDARDS

MAFS.5.NBT.1.2
MAFS.5.NBT.2.7

Explore and Grow

Use the relationship between positions in a place value chart to find each quotient.

	Hundreds	Tens	Ones	.	Tenths	Hundredths	Thousandths
2.5 ÷ 1			2	.	5		
2.5 ÷ 10							
2.5 ÷ 100							

	Hundreds	Tens	Ones	.	Tenths	Hundredths	Thousandths
2.5 ÷ 1			2	.	5		
2.5 ÷ 0.1							
2.5 ÷ 0.01							

What patterns do you notice?

MP **Structure** Describe the placement of the decimal point when dividing a decimal by 10, 100, 0.1, and 0.01.

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Think and Grow: Division Patterns with Decimals

Example Find $74 \div 10^3$.

Use place value concepts. Every time you multiply a number by $\frac{1}{10}$ or divide a number by 10, each digit in the number shifts one position to the right in a place value chart.

$74 \div 1 = 74$

$74 \div 10^1 = 74 \div 10 = 7.4$

$74 \div 10^2 = 74 \div 100 = 0.74$

$74 \div 10^3 = 74 \div 1{,}000 =$ _____

So, $74 \div 10^3 =$ _____.

Tens	Ones	.	Tenths	Hundredths	Thousandths
7	4	.			
	7	.	4		
	0	.	7	4	
	0	.	0	7	4

Notice that you can write quotients as decimals.

Notice the pattern: In each quotient, the number of places the decimal point moves to the left is the same as the exponent.



Example Find $5.8 \div 0.01$.

Use place value concepts. Every time you multiply a number by 10 or divide a number by 0.1, each digit in the number shifts one position to the left in a place value chart.

$5.8 \div 1 = 5.8$

$5.8 \div 0.1 = 58.$

$5.8 \div 0.01 =$ _____

So, $5.8 \div 0.01 =$ _____.

Hundredths	Tens	Ones	.	Tenths
		5	.	8
	5	8	.	
5	8	0	.	

Notice the pattern: When you divide by 0.1, the decimal point moves one place to the right. When you divide by 0.01, the decimal point moves two places to the right.

Show and Grow

Find the quotient.

1. $62.5 \div 10^2 =$ _____

2. $1.84 \div 0.1 =$ _____

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Name _____

Apply and Grow: Practice

Find the quotient.

3. $76 \div 10 =$ _____

4. $3.65 \div 0.1 =$ _____

5. $2.9 \div 0.01 =$ _____

6. $18.7 \div 10^2 =$ _____

Find the value of k.

7. $95.8 \div k = 958$

8. $k \div 10^3 = 0.35$

9. $245 \div k = 24{,}500$

10. Newton goes on a 10-day road trip. He takes $435 with him. He spends all of his money and spends the same amount each day. How much money does he spend each day?



11. MP **Number Sense** For which equations does $b = 100$?

$49 \div b = 0.49$

$247 \div b = 0.247$

$1.3 \div b = 0.013$

$0.5 \div b = 0.05$

12. **YOU BE THE TEACHER** Your friend says $8{,}705 \div 10^3$ is equivalent to $8{,}705 \times 0.001$. Is your friend correct? Explain.

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Think and Grow: Modeling Real Life



Example A contractor buys 2 adjacent lots of land. One lot is 0.55 acre and the other is 1.65 acres. The contractor divides the land equally for 10 new homes. How much land does each home have?

To find how much land each home has, divide the sum of the lot sizes by 10.

Add the sizes of the lots.

$$\begin{array}{r} 0.55 \\ +\ 1.65 \\ \hline \end{array}$$

_____ acres

Divide the total number of acres by 10. Dividing 2.20 by 10, or 10^1, shifts the digits _____ position to the right in a place value chart. So, the decimal point moves _____ place to the left.

$2.20 \div 10 = 2.20 \div 10^1 =$ _____ Each home has _____ acre.

Show and Grow

13. An art teacher has 68.5 pounds of clay and orders 56.5 more pounds. The teacher equally divides the clay among 100 students. How much clay does each student get?

14. A museum has a replica of the Space Needle that is 6.05 feet tall. It is one-hundredth of the height of the actual Space Needle. How tall is the actual Space Needle?



15. **DIG DEEPER!** A pile of 10^2 loonies weighs 627 grams and a pile of 10^2 toonies weighs 730 grams. How much more does a toonie weigh than a loonie? Is there more than one way to solve the problem? Explain.



A Canadian one-dollar coin is called a *loonie* and a Canadian two-dollar coin is called a *toonie*.

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Name _____

Homework & Practice 7.1

Learning Target: Find quotients involving decimals and powers of 10.

Example Find $63 \div 10^2$.

$63 \div 10^2 = 63 \div 100 =$ .63

So, $63 \div 10^2 =$ 0.63 .

When dividing a number by a power of 10, the number of places the decimal point moves to the left is the same as the exponent.





Example Find $92.7 \div 0.1$.

$92.7 \div 0.1 =$ 927.

So, $92.7 \div 0.1 =$ 927 .

When dividing a number by 0.1, the decimal point moves 1 place to the right. When dividing a number by 0.01, the decimal point moves 2 places to the right.



Find the quotient.

1. $810 \div 10 =$ _____

2. $7.4 \div 0.01 =$ _____

3. $903 \div 10^3 =$ _____

4. $267.1 \div 0.01 =$ _____

5. $5.6 \div 0.1 =$ _____

6. $0.4 \div 10^2 =$ _____

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Find the value of k.

7. $89 \div k = 8.9$

8. $k \div 0.01 = 36$

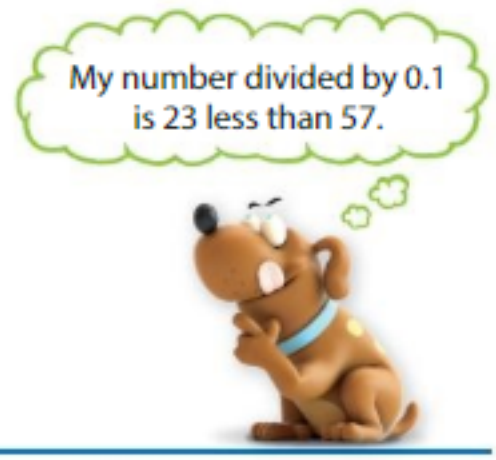
9. $72.4 \div k = 0.724$

10. A box of 100 sanitizing wipes costs $12. How much does one wipe cost?

11. **Patterns** How does the value of a number change when you divide by 10? 100? 1,000?

12. **Writing** How can you determine where to place the decimal point when dividing 61 by 1,000?

13. **DIG DEEPER!** What is Newton's number?



14. **Modeling Real Life** A family buys 2 personal watercrafts for $3,495 each. The family makes 10 equal payments for the watercrafts. What is the amount of each payment?

15. **Modeling Real Life** A group of people attempts to bake the largest vegan cake. They use 17 kilograms of cocoa powder, which is one-tenth the amount of kilograms of dates they use. How many kilograms of cocoa power and dates do they use altogether?

Review & Refresh

Find the sum or difference.

16. $0.75 - 0.23 =$ _____

17. $1.46 + 1.97 =$ _____

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Name _____

Estimate Decimal Quotients

7.2

Learning Target: Use compatible numbers to estimate quotients involving decimals.

Success Criteria:

- I can rename a dividend to estimate a quotient.
- I can use compatible numbers to estimate a quotient.
- I can explain different ways to estimate a quotient.

FLORIDA STANDARDS

MAFS.5.NBT.1.4
MAFS.5.NBT.2.7

Explore and Grow

Choose an expression to estimate each quotient. Write the expression. You may use an expression more than once.

32 ÷ 8	36 ÷ 9
35 ÷ 7	30 ÷ 10

32.7 ÷ 8.8	33.6 ÷ 9.2	34.3 ÷ 8.1	35 ÷ 10.1
_____ ÷ _____	_____ ÷ _____	_____ ÷ _____	_____ ÷ _____

Compare your answers with a partner. Did you choose the same expressions?

MP **Construct Arguments** Which estimated quotient do you think will be closer to the quotient 8.3 ÷ 2.1? Explain your reasoning.

8 ÷ 2

9 ÷ 3

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Think and Grow: Estimate Decimal Quotients

Key Idea You can use compatible numbers to estimate quotients involving decimals. When the divisor is greater than the dividend, rename the dividend as tenths or hundredths, then divide.

Example Estimate 146.26 ÷ 41.2.

Round the divisor 41.2 to 40.

Think: What numbers close to 146.26 are easily divided by 40?

Use 120. 146.26 ÷ 41.2
↓ ↓
120 ÷ 40 = _____

Use 160. 146.26 ÷ 41.2 =
↓ ↓
160 ÷ 40 = _____

Choose 160 because 146.26 is closer to 160. So, 146.26 ÷ 41.2 is about _____.

Example Estimate 4.2 ÷ 8.

Rename 4.2 as tenths.

4.2 is 42 tenths. 42 tenths is close to 40 tenths. 40 and 8 are compatible numbers.

40 tenths ÷ 8 = _____ tenths, or _____

So, 4.2 ÷ 8 is about _____.

Show and Grow

Estimate the quotient.

1. 17.4 ÷ 3.1

2. 57.5 ÷ 6.89

3. 3.7 ÷ 5

4. 25.8 ÷ 30

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Name _____

Apply and Grow: Practice

Estimate the quotient.

5. $3.5 \div 6$

6. $1.87 \div 9$

7. $46 \div 2.3$

8. $31.1 \div 6.5$

9. $91.08 \div 5.2$

10. $137.14 \div 12.2$

11. A group of 6 friends goes ice skating. They pay $43.50 altogether for admission and skate rental. The friends share the cost equally. How much does each friend pay?



12. MP **Reasoning** Descartes estimates $43.2 \div 7.3$ using mental math. Do you think he uses $43 \div 7$ or $42 \div 7$? Explain.

13. DIG DEEPER! Describe a division situation in which an estimate of two decimals is appropriate.

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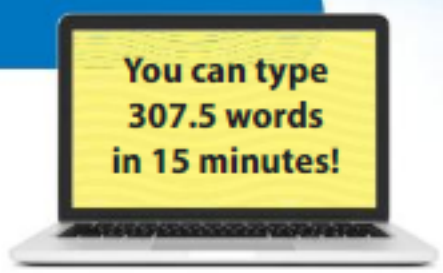
Think and Grow: Modeling Real Life



Example Your friend types 25 words each minute. About how many more words can your friend type each minute than you?

To find how many words you can type each minute, divide the number of words you type in 15 minutes by 15.

Think: What numbers close to 307.5 are easily divided by 15?

Use 300. $307.5 \div 15$

$300 \div 15 =$ _____

Use 450. $307.5 \div 15 =$

$450 \div 15 =$ _____

Choose 300 because 307.5 is closer to 300. So, $307.5 \div 15$ is about _____.

So, you type about _____ words each minute.

Subtract the words you type each minute from the words your friend types each minute.

$$\begin{array}{r} 25 \\ -\ \square \\ \hline \end{array}$$

Your friend can type about _____ more words each minute than you.

Show and Grow

14. Newton subscribes to a television streaming service and buys a gym membership. He spends $143.99 on the streaming service for 12 months. About how much more does it cost each month for the gym membership than the streaming service?



15. A fish tank pump filters 158.5 gallons of water each hour. About how many gallons of water does the pump filter each minute?

16. DIG DEEPER! A group of 32 students goes to a museum and a play. The total cost for the museum is $358.98 and the total cost for the play is $256.48. About how much does it cost for each student to go to the museum and the play?

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Name _____

Homework & Practice 7.2

Learning Target: Use compatible numbers to estimate quotients involving decimals.

Example Estimate $22.19 \div 5.4$.

Round the divisor 5.4 to 5.

Think: What numbers close to 22.19 are easily divided by 5?

Use 20. $22.19 \div 5.4$

$20 \div 5 = 4$

Use 25. $22.19 \div 5.4$

$25 \div 5 = 5$

Choose 20 because 22.19 is closer to 20. So, $22.19 \div 5.4$ is about 4.

Estimate the quotient.

1. $2.3 \div 6$

2. $1.67 \div 8$

3. $28 \div 4.7$

4. $13.8 \div 4.9$

5. $42.1 \div 7.3$

6. $201.94 \div 18.1$

7. A carpenter has a plank of wood that is 121.92 centimeters long. He cuts the plank into 4 equal pieces. About how long is each piece?



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8. **Reasoning** A family used 9.8 gallons of gasoline to drive 275.5 miles. To determine how far they drove using one gallon of gasoline, can they use an estimate, or is an exact answer required? Explain.

9. **YOU BE THE TEACHER** Your friend says $9 \div 2.5$ is about 3. Is your friend's estimate reasonable? Explain.

Number Sense Without calculating, tell whether the quotient is greater than or less than 1. Explain.

10. $4.58 \div 0.3$

11. $0.6 \div 12$

12. **Modeling Real Life** The maximum allowed flow rate for a shower head in California is 42.5 gallons of water in 17 minutes. About how much greater is this than the maximum allowed flow rate for a kitchen faucet in California?

California Allowed Flow Rate per Minute (gallons)	
Kitchen faucet	2.2

13. **Modeling Real Life** To compare the amounts in the table, you assume the same amount of snow fell each hour for 24 hours. About how many more inches of snow fell in Colorado each hour than in Utah?

24-hour Snowfall Records (inches)	
Colorado	75.8
Illinois	37.8
Utah	55.5

Review & Refresh

Find the product. Check whether your answer is reasonable.

14. $56 \times 78 =$ _____

15. $902 \times 27 =$ _____

16. $4{,}602 \times 35 =$ _____

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Name _____

Use Models to Divide Decimals by Whole Numbers

7.3

Learning Target: Use models to divide decimals by whole numbers.

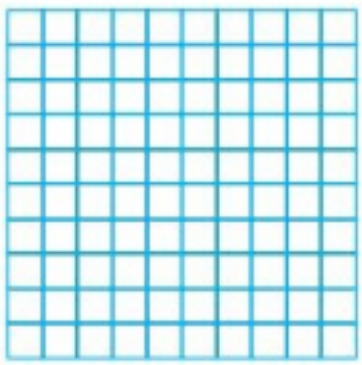
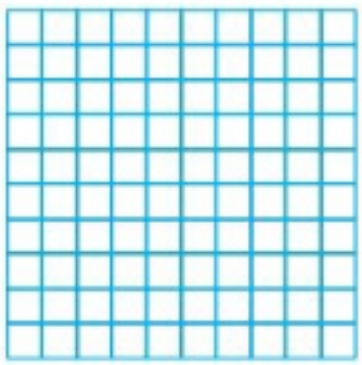
Success Criteria:

- I can use a model to represent a decimal.
- I can divide a model to show equal groups.
- I can use a model to divide a decimal by a whole number.

FLORIDA STANDARDS
MAFS.5.NBT.2.7

Explore and Grow

Complete the table.

Expression	0.8 ÷ 4	0.72 ÷ 3
Model		
Number of Groups	4	3
Quotient	_____	_____

MP **Reasoning** When you divide a decimal by a whole number, what does the quotient represent?

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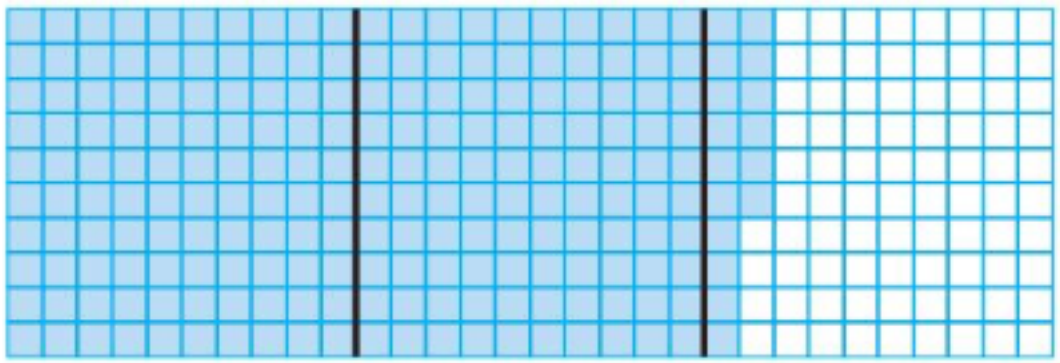
Think and Grow: Use Models to Divide Decimals

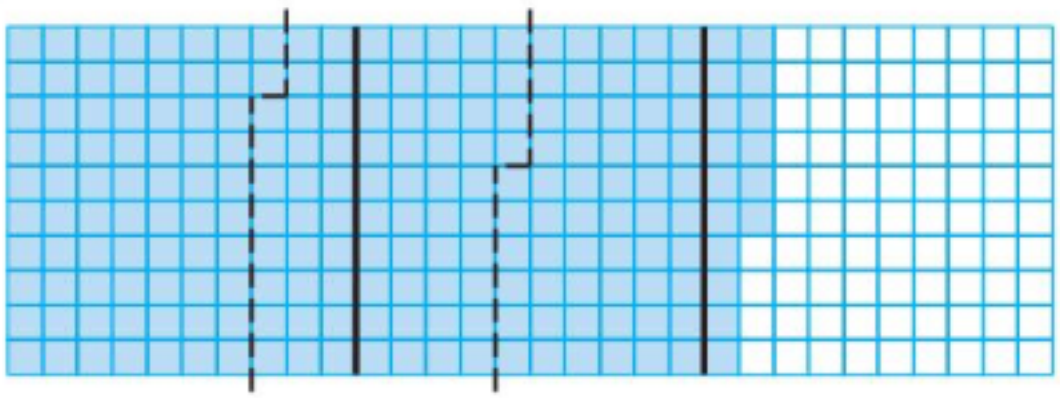
Example Use a model to find 2.16 ÷ 3.

Think: 2.16 is 2 ones, 1 tenth, and 6 hundredths.

Shade 216 hundredths to represent 2.16.



Divide the model to show 3 equal groups.



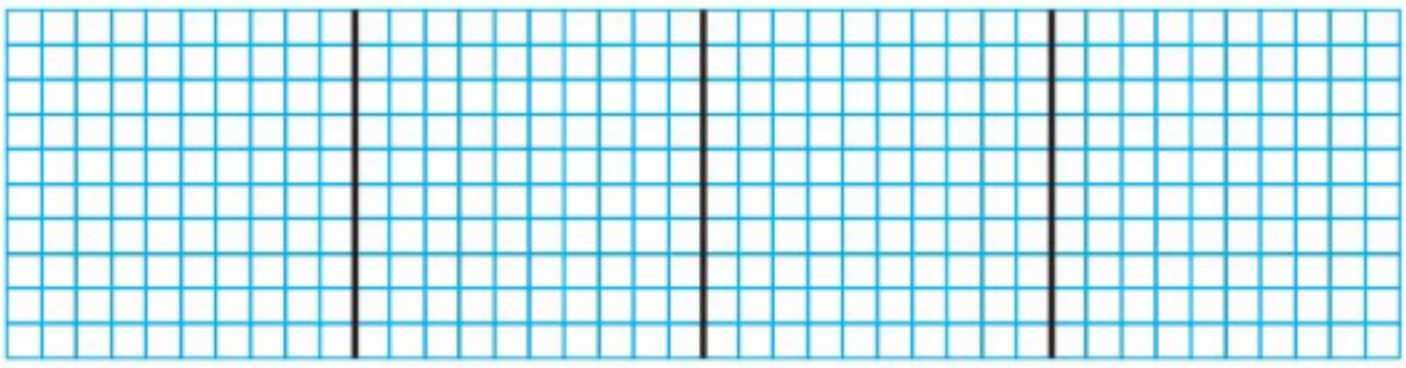
- 21 tenths can be divided equally as 3 groups of _____ tenths.
- 6 hundredths can be divided equally as 3 groups of _____ hundredths.

So, 216 hundredths can be divided equally as 3 groups of _____ hundredths.

So, 2.16 ÷ 3 = _____.

Show and Grow

1. Use the model to find 3.25 ÷ 5.



3.25 ÷ 5 = _____

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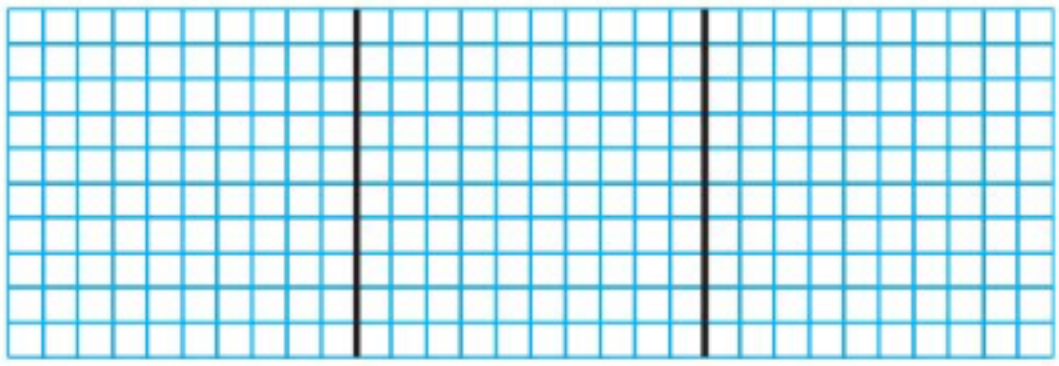
Name _____

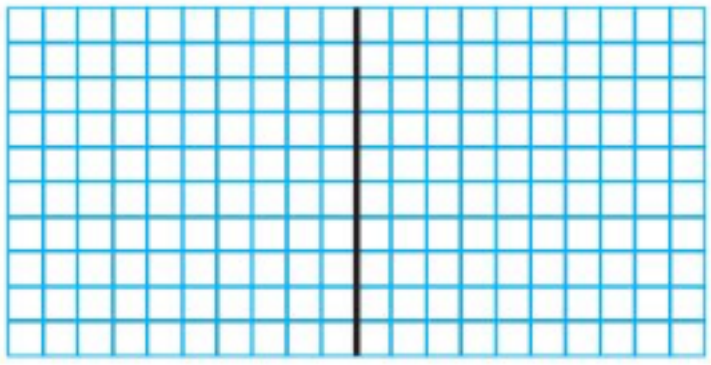
Apply and Grow: Practice

Use the model to find the quotient.

2. 2.4 ÷ 4



3. 1.36 ÷ 2



Use a model to find the quotient.

4. 1.5 ÷ 3

5. 2.7 ÷ 9

6. 1.44 ÷ 8

7. 3.12 ÷ 6

8. MP **Reasoning** Do you start dividing the ones first when finding 5.95 ÷ 7? Explain.

9. MP **Number Sense** Without dividing, determine whether the quotient of 9.85 and 5 is greater than or less than 2. Explain.

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Think and Grow: Modeling Real Life

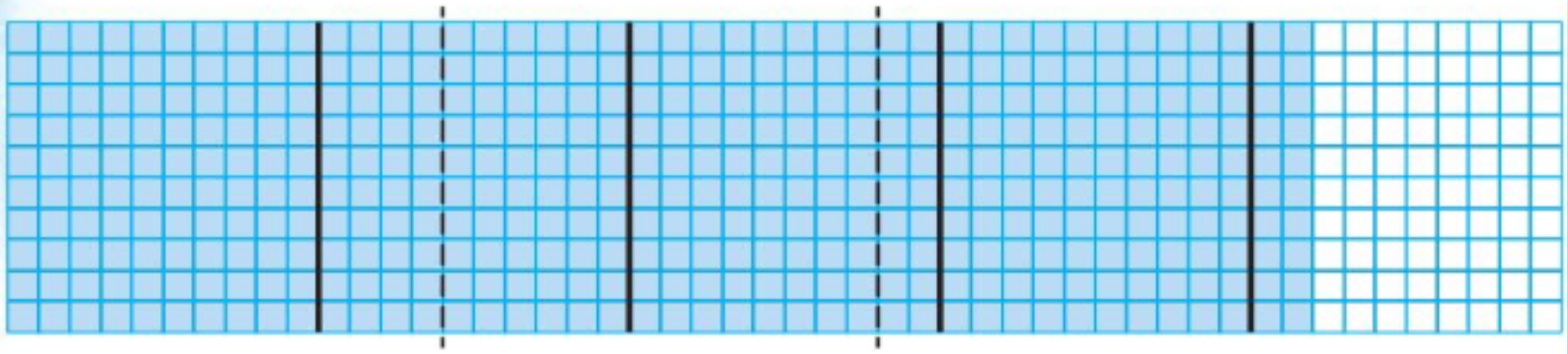


Example A bag of 3 racquetballs weighs 4.2 ounces. What is the weight of each racquetball?

Divide the weight of the bag by 3 to find the weight of each racquetball.

Think: 4.2 is 4 ones and 2 tenths.

Shade 42 tenths to represent 4.2. Divide the model to show 3 equal groups.



42 tenths can be divided equally as 3 groups of _____ tenths.

$4.2 \div 3 =$ _____

So, each racquetball weighs _____ ounces.

Show and Grow

10. You cut a 3.75-foot-long string into 5 pieces of equal length to make a beaded wind chime. What is the length of each piece of string?



11. **DIG DEEPER!** You pay $5.49 for 3 pounds of plums and $6.36 for 4 pounds of peaches. Which fruit costs more per pound? How much more?

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Name _____

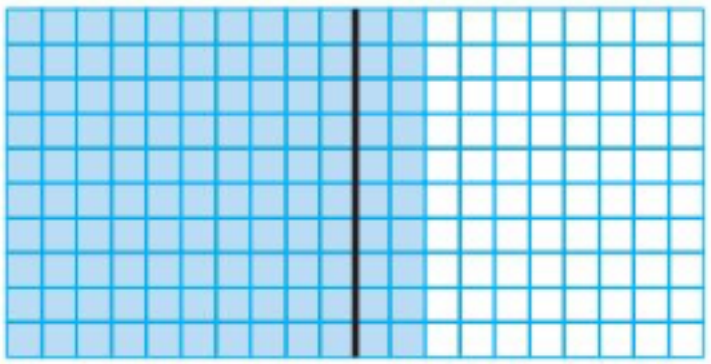
Homework & Practice 7.3

Learning Target: Use models to divide decimals by whole numbers.

Example Use a model to find 1.2 ÷ 6.

Think: 1.2 is 1 one and 2 tenths.

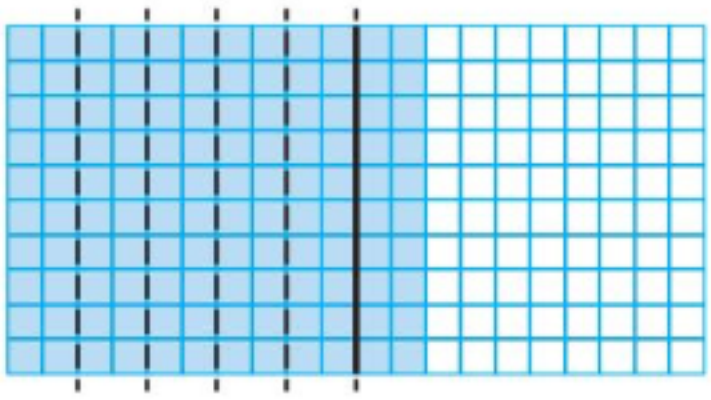
Shade 12 tenths to represent 1.2.



Divide the model to show 6 equal groups.

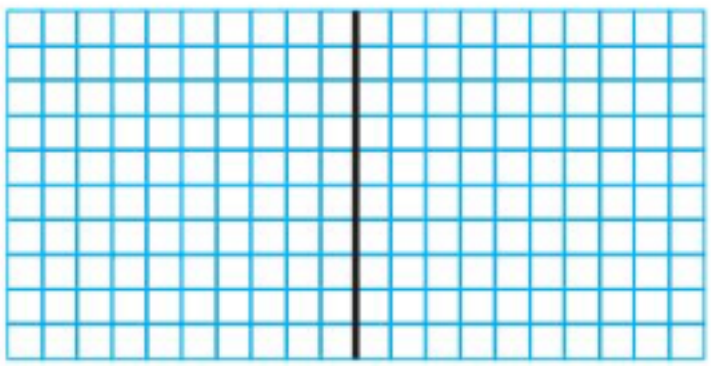
12 tenths can be divided equally as 6 groups of 2 tenths.

So, 1.2 ÷ 6 = 0.2 .

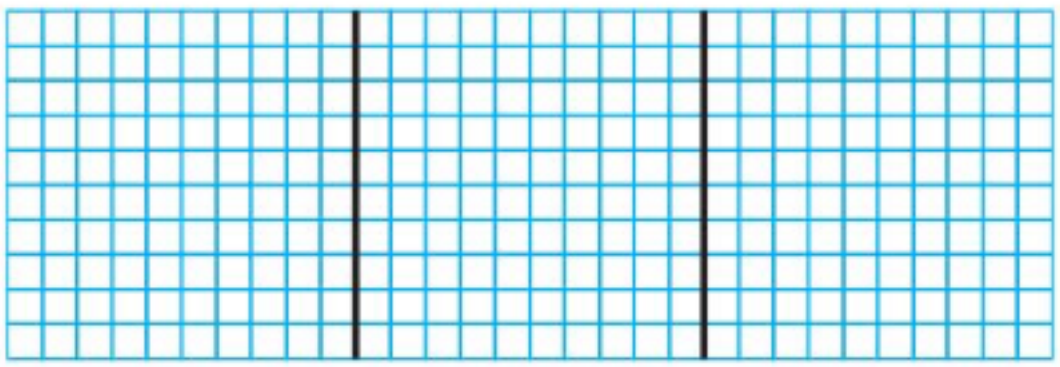


Use the model to find the quotient.

1. 1.5 ÷ 5



2. 2.55 ÷ 3



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Use a model to find the quotient.

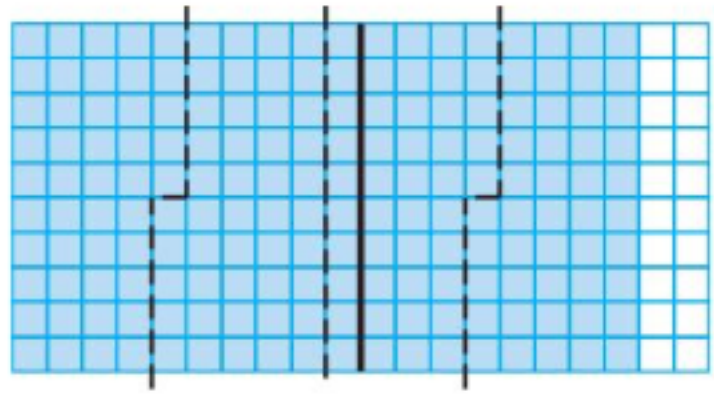
3. $1.6 \div 8$

4. $2.1 \div 7$

5. $1.56 \div 2$

6. $2.84 \div 4$

7. **Structure** Write a decimal division equation represented by the model.



8. **Writing** Explain how dividing a decimal by a whole number is similar to dividing a whole number by a whole number.

9. **Modeling Real Life** A designer learns there are 5.08 centimeters in 2 inches. How many centimeters are in 1 inch?

10. **Modeling Real Life** Newton buys 4 gallons of gasoline. He pays $8.64. How much does 1 gallon of gasoline cost?

Review & Refresh

Find the product. Explain the strategy you used.

11. $0.9 \times 1.1 =$ _____

12. $1.2 \times 2.7 =$ _____

13. $1.4 \times 0.8 =$ _____

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Name _____

Divide Decimals by One-Digit Numbers

7.4

Learning Target: Divide decimals by one-digit whole numbers.

Success Criteria:

- I can use place value to divide.
- I can place the decimal point in the quotient.
- I can regroup when necessary.
- I can use estimation to check my answer.

FLORIDA STANDARDS
MAFS.5.NBT.2.7

Explore and Grow

Complete the table.

Expression	Number of Groups	Quotient
225 ÷ 5	_____	_____
22.5 ÷ 5	_____	_____
2.25 ÷ 5	_____	_____

What pattern do you notice in the placement of the decimal point?

MP **Reasoning** How is dividing decimals by one-digit whole numbers similar to dividing whole numbers?

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Think and Grow: Divide Decimals by One-Digit Numbers

Example Find $7.38 \div 6$.

Estimate _____

Think: 738×0.01 is 7.38. So, you can multiply the quotient $738 \div 6$ by 0.01 to find $7.38 \div 6$.



Divide the ones.

$$\begin{array}{r} 1 \\ 6\overline{)7.38} \\ -\,6 \\ \hline 1 \end{array}$$

7 ones $\div$ 6

1 one $\times$ 6

7 ones $-$ 6 ones

There is 1 one left over.

Divide the tenths.

$$\begin{array}{r} 1.2 \\ 6\overline{)7.38} \\ -\,6 \\ \hline 1\,3 \\ -\,1\,2 \\ \hline 1 \end{array}$$

Place the decimal point.

Regroup 1 one as 10 tenths and combine with 3 tenths

13 tenths $\div$ 6

2 tenths $\times$ 6

13 tenths $-$ 12 tenths

There is 1 tenth left over.

Divide the hundredths.

$$\begin{array}{r} 1.23 \\ 6\overline{)7.38} \\ -\,6 \\ \hline 1\,3 \\ -\,1\,2 \\ \hline 18 \\ -\,18 \\ \hline 0 \end{array}$$

Regroup 1 tenth as 10 hundredths and combine with 8 hundredths.

18 hundredths $\div$ 6

3 hundredths $\times$ 6

18 hundredths $-$ 18 hundredths

There are 0 hundredths left over.

So, $7.38 \div 6 =$ _____.

Reasonable? _____ is close to _____. ✓

Show and Grow

Find the quotient. Then check your answer.

1. $2\overline{)9.16}$

2. $5\overline{)23.5}$

3. $3\overline{)6.27}$

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Name _____

Apply and Grow: Practice

Find the quotient. Then check your answer.

4. $4\overline{)16.8}$

5. $9\overline{)1.53}$

6. $5\overline{)82.5}$

7. $77.4 \div 3 =$ _____

8. $113.6 \div 8 =$ _____

9. $129.43 \div 7 =$ _____

Find the value of y.

10. $y \div 2 = 4.8$

11. $6.05 \div 5 = y$

12. $y \div 8 = 4.29$

13. MP **Reasoning** Newton finds $75.15 \div 9$. In what place is the first digit of the quotient? Explain.

14. DIG DEEPER! Find the missing digits.

$$\begin{array}{r} \square.89 \\ 6\overline{)47.3\square} \end{array}$$

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Think and Grow: Modeling Real Life

Example A group of 5 gold miners finds the amounts of gold shown. They divide the gold equally. How many ounces does each miner get?

Week	Gold (ounces)
1	16.5
2	19.75



To find how many ounces each miner gets, divide the total amount of gold by 5.

Add the amounts of gold.

$$\begin{array}{r} {\scriptstyle 11} \\ 16.5 \\ +\ 19.75 \\ \hline 36.25 \end{array}$$

The miners find _____ ounces of gold.

Divide the total amount of gold by 5.

$$\begin{array}{r} \square \\ 5\overline{)36.25} \\ -\ \square\downarrow \\ \hline 12 \\ -\ \square\downarrow \\ \hline 25 \\ -\ \square \\ \hline \square \end{array}$$

36 ones ÷ 5

12 tenths ÷ 5

25 hundredths ÷ 5

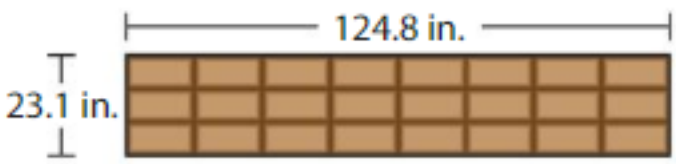
Each miner gets _____ ounces of gold.

Show and Grow

15. A pharmacist combines the medicine from both vials and divides it equally into 7 doses. How much medicine is in each dose?

Vial	Medicine (milliliters)
1	4.5
2	20

16. Identical rectangular stepping stones form a path in a garden. What are the dimensions of each stone?



17. **DIG DEEPER!** A set of 6 flying discs is priced $21.36. A customer saves $9.24 by buying the set rather than buying them individually. What is one flying disc priced individually?

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Name _____

Homework & Practice 7.4

Learning Target: Divide decimals by one-digit whole numbers.

Example Find 46.53 ÷ 9.

Estimate $45 \div 9 = 5$

4 tens cannot be shared among 9 groups without regrouping.
So, regroup 4 tens as 40 ones and combine with 6 ones.

Divide the ones.

$$\begin{array}{r} 5 \\ 9\overline{)46.53} \\ -\,45 \\ \hline 1 \end{array}$$

Divide the tenths.

$$\begin{array}{r} 5.1 \\ 9\overline{)46.53} \\ -\,45 \\ \hline 15 \\ -\;\;09 \\ \hline 6 \end{array}$$

Divide the hundredths.

$$\begin{array}{r} 5.17 \\ 9\overline{)46.53} \\ -\,45 \\ \hline 15 \\ -\;\;09 \\ \hline 63 \\ -\;\;63 \\ \hline 0 \end{array}$$

So, $46.53 \div 9 =$ 5.17 .

Reasonable? 5.17 is close to 5 . ✓

Find the quotient. Then check your answer.

1. $3\overline{)9.6}$

2. $6\overline{)7.56}$

3. $8\overline{)42.4}$

4. $63.6 \div 4 =$ _____

5. $15.68 \div 7 =$ _____

6. $143.82 \div 9 =$ _____

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Find the value of y.

7. $y \div 6 = 7.8$

8. $14.9 \div 5 = y$

9. $y \div 2 = 4.7$

10. **Number Sense** Evaluate the expression.

$$(213.3 - 95.7) \div 8$$

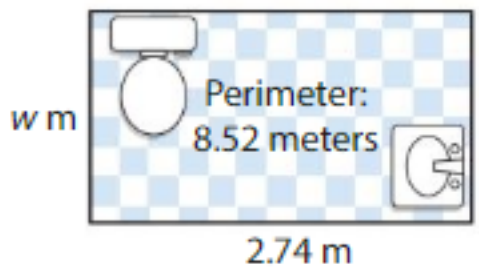
11. **Writing** Write and solve a real-life problem that involves dividing a decimal by a whole number.

12. **YOU BE THE TEACHER** Your friend finds $197.2 \div 4$. Is your friend correct? Explain.

$$\begin{array}{r} 4.93 \\ 4\overline{)197.2} \\ -16 \\ \hline 37 \\ -36 \\ \hline 12 \\ -12 \\ \hline 0 \end{array}$$

13. **Modeling Real Life** You buy 2 packages of ground beef. One package contains 4.5 pounds and the other contains 2.25 pounds. You put equal amounts of meat into 9 freezer bags. How many pounds of meat are in each bag?

14. **DIG DEEPER!** A homeowner hangs wallpaper on the walls of her bathroom. What is the width of the bathroom?



Review & Refresh

Use partial quotients to divide.

15. $607 \div 15 =$ _____

16. $4{,}591 \div 33 =$ _____

17. $6{,}699 \div 87 =$ _____

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Name _____

7.5 Divide Decimals by Two-Digit Numbers

Learning Target: Divide decimals by two-digit whole numbers.

Success Criteria:

- I can use place value to divide.
- I can place the decimal point in the quotient.
- I can regroup when necessary.
- I can use estimation to divide.

FLORIDA STANDARDS
MAFS.5.NBT.2.7

Explore and Grow

Write a division problem you can use to find the width of each rectangle. Then find the width of each rectangle.

11 inches



Area = 253 square inches

11 meters



Area = 25.3 square meters

MP **Precision** Explain how you can use estimation to check your answers.

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Think and Grow: Divide Decimals by Two-Digit Numbers

Example Find 79.8 ÷ 14. Estimate _____

Regroup 7 tens as 70 ones and combine with 9 ones.

Divide the ones.

```
   5
14)79.8
 − 70
   9
```

79 ones ÷ 14
5 ones × 14
79 ones − 70 ones
There are 9 ones left over.

Divide the tenths.

```
   5.7
14)79.8
 − 70
   98
 − 98
    0
```

Place the decimal point.
Regroup 9 ones as 90 tenths and combine with 8 tenths.
98 tenths ÷ 14
7 tenths × 14
98 tenths − 98 tenths
There are 0 tenths left over.

So, 79.8 ÷ 14 = _____. Reasonable? _____ is close to _____. ✓

Example Find 20.54 ÷ 26.

Step 1: Estimate the quotient.

2,000 hundredths ÷ 25 = _____ hundredths

Step 2: Divide as you do with whole numbers.

Step 3: Use the estimate to place the decimal point.

```
  □
26)20.54
 − □
  234
 − □
    0
```

So, 20.54 ÷ 26 = _____.

Show and Grow

Find the quotient. Then check your answer.

1. 12)51.6

2. 17)140.25

3. 61)32.33

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Name _____

Apply and Grow: Practice

Place a decimal point where it belongs in the quotient.

4. $251.75 \div 19 = 1325$

5. $88.04 \div 62 = 142$

6. $3.22 \div 23 = 014$

Find the quotient. Then check your answer.

7. $54\overline{)97.2}$

8. $91\overline{)200.2}$

9. $2\overline{)56.2}$

10. $6.08 \div 16 =$ _____

11. $7.45 \div 5 =$ _____

12. $147.63 \div 37 =$ _____

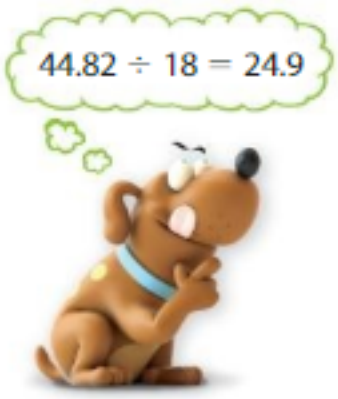
Find the value of y.

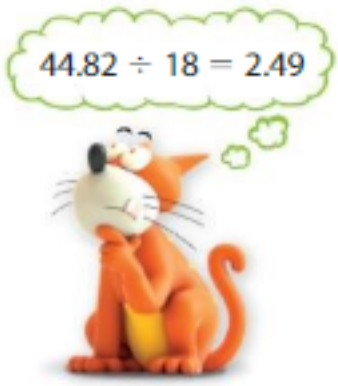
13. $y \div 44 = 1.82$

14. $106.6 \div 82 = y$

15. $y \div 13 = 2.6$

16. MP **Logic** Newton and Descartes find $44.82 \div 18$. Only one of them is correct. Without solving, who is correct? Explain.





17. **DIG DEEPER!** Find a decimal that you can divide by a two-digit whole number to get the quotient shown. Fill in the boxes with your dividend and divisor.

$$0.6$$
$$\square\overline{)\square}$$

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Think and Grow: Modeling Real Life



Example You practice paddleboarding for 3 weeks. You paddle the same amount each day for 5 days each week. You paddle 22.5 miles altogether. How many miles do you paddle each day?

To find the total number of days you paddle in 3 weeks, multiply the days you paddle each week by 3.

$5 \times 3 = 15$ So, you paddleboard _____ days in 3 weeks.

To find the number of miles you paddle each day, divide the total number of miles by the number of days you paddle in 3 weeks.

$$\begin{array}{r} \square \\ 15\overline{)22.5} \\ -\ \square \\ \hline 75 \\ -\ \square \\ \hline \square \end{array}$$

22 ones ÷ 15

75 tenths ÷ 15

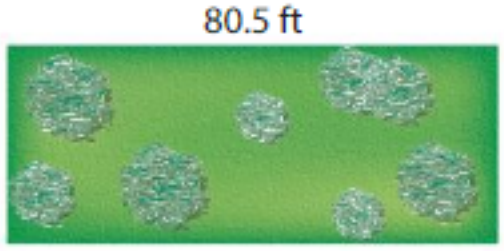
You paddle _____ miles each day.

Show and Grow

18. Descartes borrows $6,314.76 for an all-terrain vehicle. He pays back the money in equal amounts each month for 3 years. What is his monthly payment?

19. A blue car travels 297.6 miles using 12 gallons of gasoline and a red car travels 358.8 miles using 13 gallons of gasoline. Which car travels farther using 1 gallon of gasoline? How much farther?

20. **DIG DEEPER!** The rectangular dog park has an area of 2,616.25 square feet. How much fencing does an employee need to enclose the dog park?



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Name _____

Homework & Practice 7.5

Learning Target: Divide decimals by two-digit whole numbers.

Example Find 8.52 ÷ 12.

Step 1: Estimate the quotient.

850 hundredths ÷ 10 = 85 hundredths

Step 2: Divide as you do with whole numbers.

Step 3: Use the estimate to place the decimal point.

```
   71
12)8.52
 − 84
   12
 − 12
    0
```

So, 8.52 ÷ 12 = 0.71.

Place a decimal point where it belongs in the quotient.

1. 127.2 ÷ 24 = 5 3

2. 48.64 ÷ 32 = 1 5 2

3. 514.18 ÷ 47 = 1 0 9 4

Find the quotient. Then check your answer.

4. 72)93.6

5. 7)3.92

6. 29)1.74

7. 24.3 ÷ 9 = _____

8. 244.9 ÷ 31 = _____

9. 55.62 ÷ 27 = _____

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Find the value of y.

10. $y \div 16 = 0.23$

11. $44.1 \div 21 = y$

12. $y \div 28 = 11.04$

13. **YOU BE THE TEACHER** Your friend finds $21.44 \div 16$. Is your friend correct? Explain.

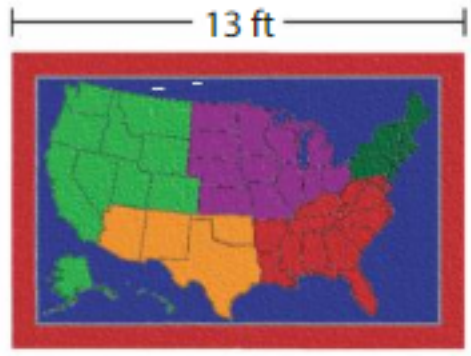
$$\begin{array}{r} 13.4 \\ 16\overline{)21.44} \\ -\ 16 \\ \hline 54 \\ -\ 48 \\ \hline 64 \\ -\ 64 \\ \hline 0 \end{array}$$

14. **DIG DEEPER!** A banker divides the amount shown among 12 people. How can she regroup the money? How much money does each person get?



15. **Modeling Real Life** You have hip-hop dance practice for 5 weeks. You attend practice 5 days each week. Each practice is the same length of time. You practice for 37.5 hours altogether. How many hours do you practice each day?

16. **DIG DEEPER!** Your rectangular classroom rug has an area of 110.5 square feet. What is the perimeter of the rug?



Review & Refresh

Find the product.

17. $0.52 \times 0.4 =$ _____

18. $0.7 \times 21.3 =$ _____

19. $1.52 \times 8.6 =$ _____

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Name _____

Use Models to Divide Decimals

7.6

Learning Target: Use models to divide decimals by decimals.

Success Criteria:

- I can use a model to represent a decimal.
- I can divide a model to show equal groups.
- I can use a model to divide a decimal by a decimal.

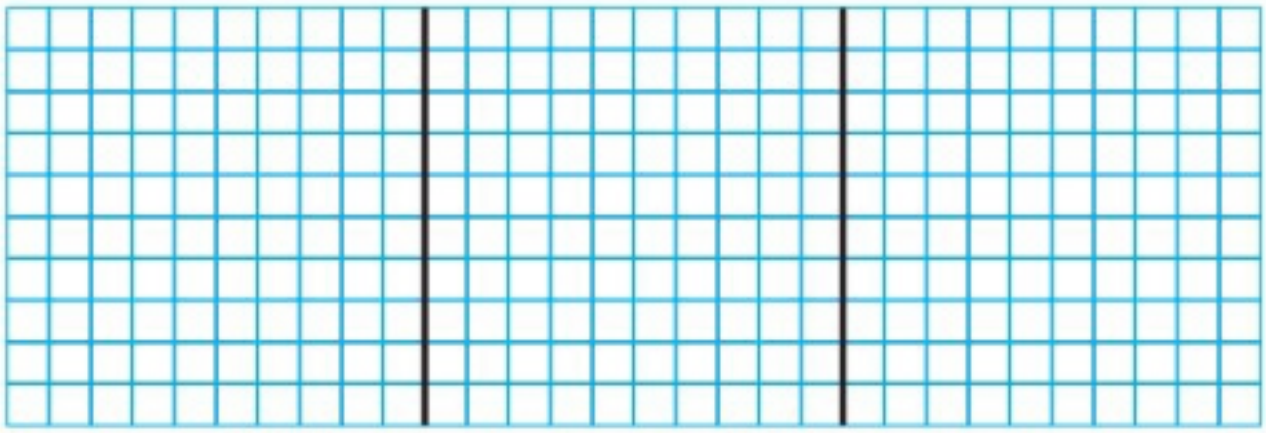
FLORID STANDARDS

MAFS.5.NBT.2.7

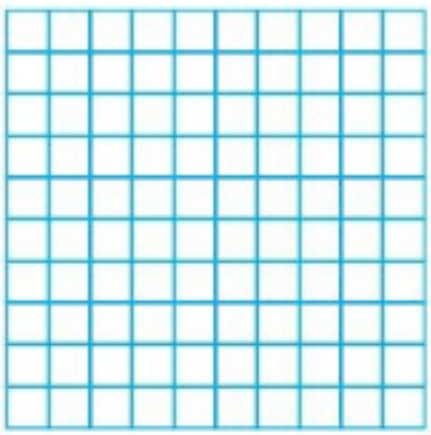
Explore and Grow

Use the model to find each quotient.

$2.4 \div 0.8$



$0.3 \div 0.05$



MP **Structure** When using a model to divide decimals, how do you determine the number of rows and columns to shade? How do you divide the shaded region?

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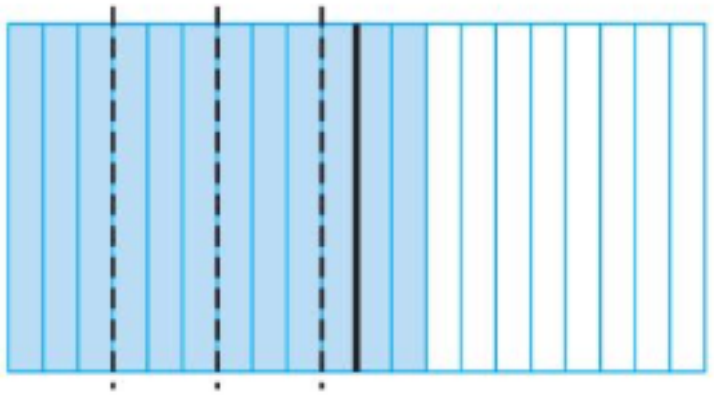
Think and Grow: Use Models to Divide Decimals

Example Use a model to find $1.2 \div 0.3$.

Shade 12 columns to represent 1.2.

Divide the model to show groups of 0.3.

There are _____ groups of _____ tenths.



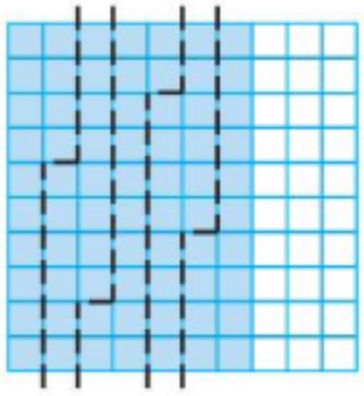
So, $1.2 \div 0.3 =$ _____.

Example Use a model to find $0.7 \div 0.14$.

Shade 7 columns to represent 0.7.

Divide the model to show groups of 0.14.

There are _____ groups of _____ hundredths.



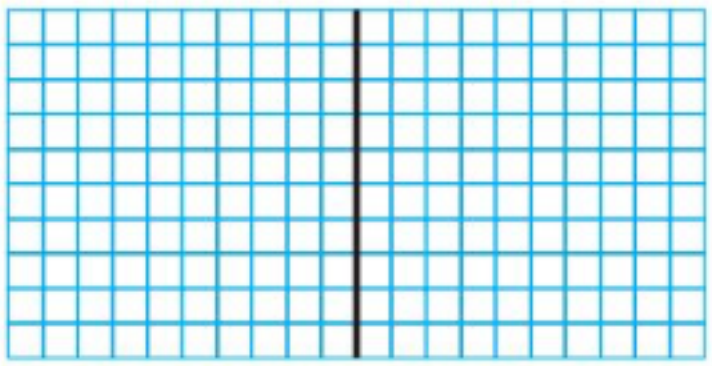


So, $0.7 \div 0.14 =$ _____.

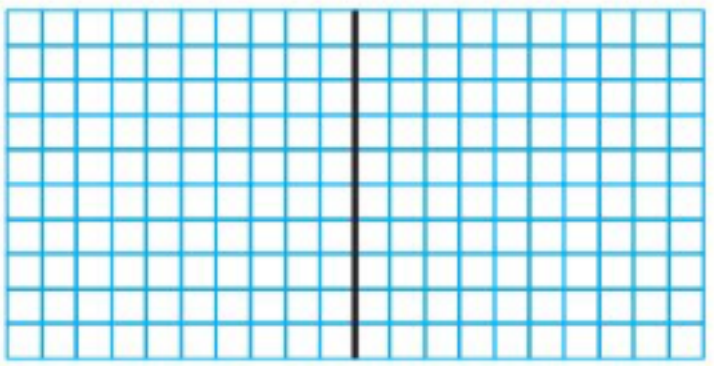
Show and Grow

Use the model to find the quotient.

1. $1.5 \div 0.5 =$ _____



2. $1.72 \div 0.86 =$ _____



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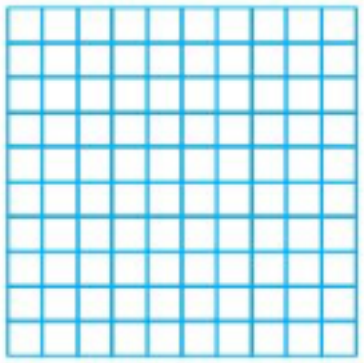
Name _____

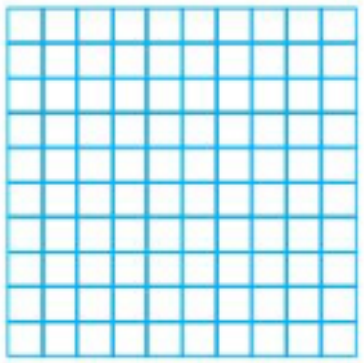
Apply and Grow: Practice

Use the model to find the quotient.

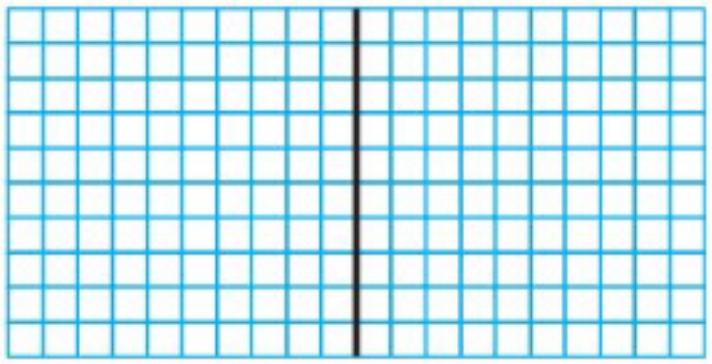
3. $0.32 \div 0.04 =$ _____



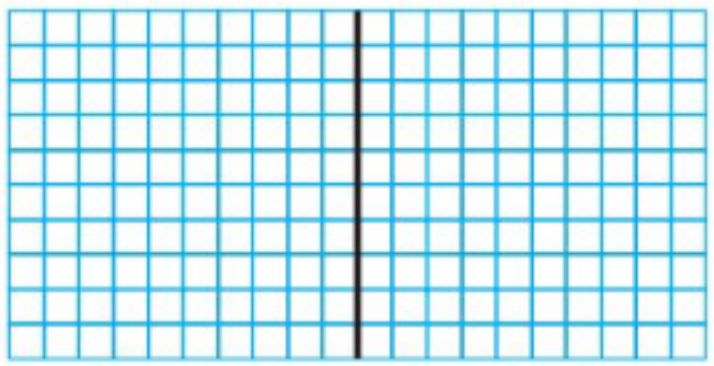
4. $0.9 \div 0.15 =$ _____



5. $1.4 \div 0.07 =$ _____

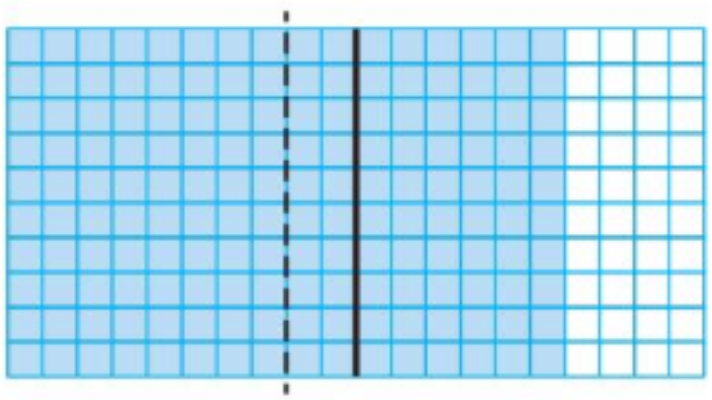


6. $1.08 \div 0.09 =$ _____



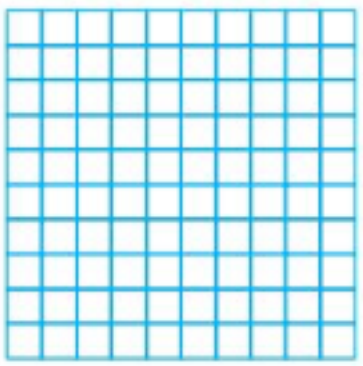
7. You have $1.50 in dimes. You exchange all of your dimes for quarters. How many quarters do you get?

8. **YOU BE THE TEACHER** Your friend uses the model below and says $1.6 \div 0.08 = 2$. Is your friend correct? Explain.



9. **Structure** Use the model to find the missing number.

$0.72 \div$ _____ $= 8$



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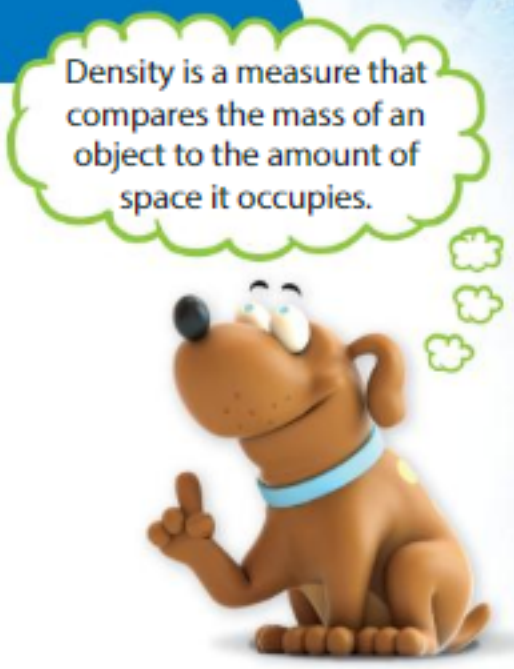
Think and Grow: Modeling Real Life



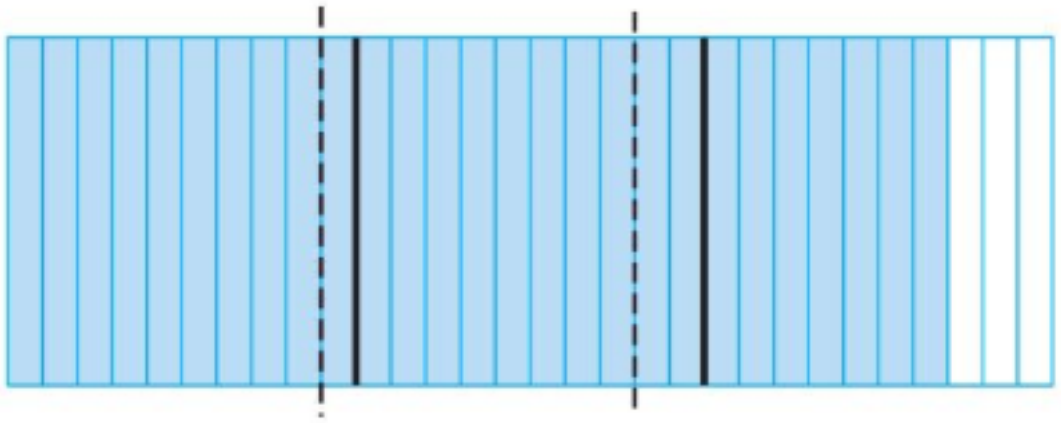
Example Is aluminum more than 5 times as dense as neon?

Chemical Elements	
Name	**Density (kg/m^3)**
Hydrogen	0.09
Neon	0.9
Oxygen	1.43
Aluminum	2.7

Divide the density of aluminum by the density of neon to find how many times as dense it is.

Use a model. Shade 27 columns to represent 2.7.

Divide the model to show groups of 0.9.



There are _____ groups

of _____ tenths.

So, $2.7 \div 0.9 =$ _____.

Compare the quotient to 5. _____ ◯ 5

So, aluminum _____ more than 5 times as dense as neon.

Show and Grow

10. Use the table above. Is neon more than 9 times as dense as hydrogen?

11. You fill a bag with peanuts, give the cashier $5, and receive $3.16 in change. How many pounds of peanuts do you buy?



12. **DIG DEEPER!** You have 2.88 meters of copper wire and 5.85 meters of aluminum wire. You need 0.24 meter of copper wire to make one bracelet and 0.65 meter of aluminum wire to make one necklace. Can you make more bracelets or more necklaces? Explain.

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Name _____

Homework & Practice 7.6

Learning Target: Use models to divide decimals by decimals.

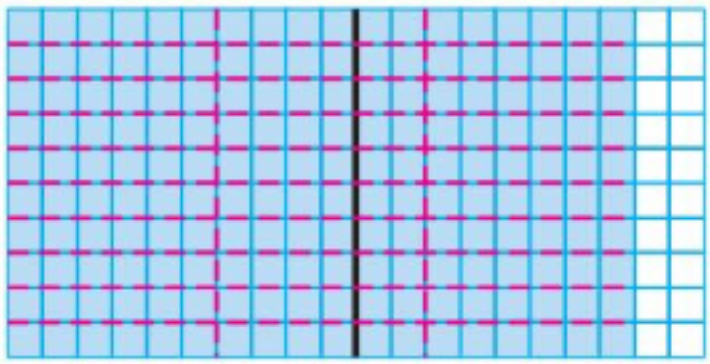
Example Use a model to find 1.8 ÷ 0.06.

Shade 18 columns to represent 1.8.

Divide the model to show groups of 0.06.

There are 30 groups

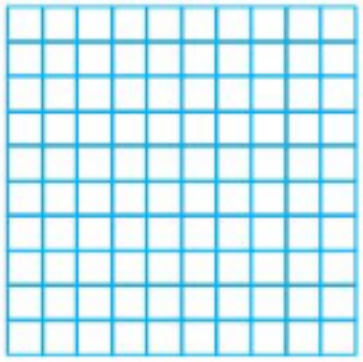
of 6 hundredths.



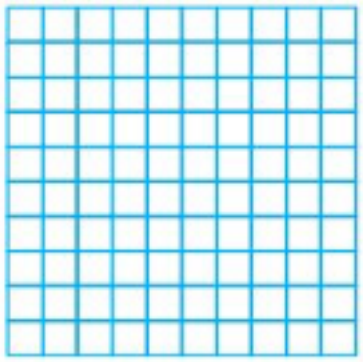
So, 1.8 ÷ 0.06 = 30 .

Use the model to find the quotient.

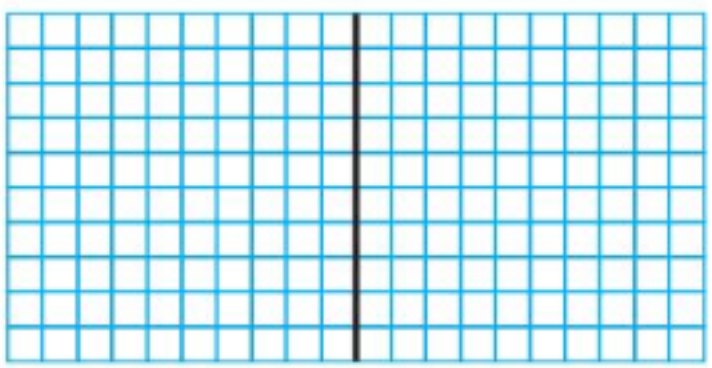
1. 0.08 ÷ 0.02 = _____



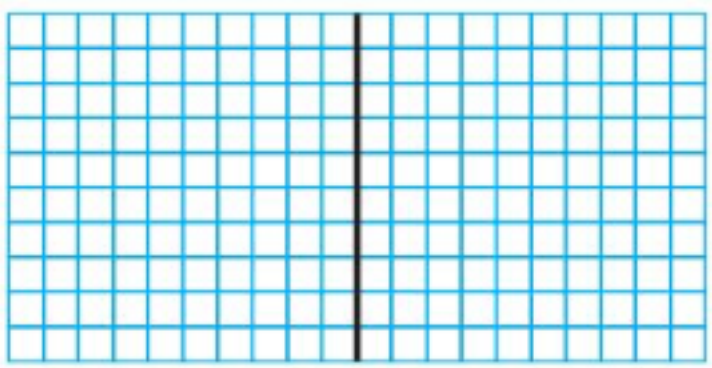
2. 0.4 ÷ 0.05 = _____



3. 1.7 ÷ 0.85 = _____



4. 1.5 ÷ 0.3 = _____



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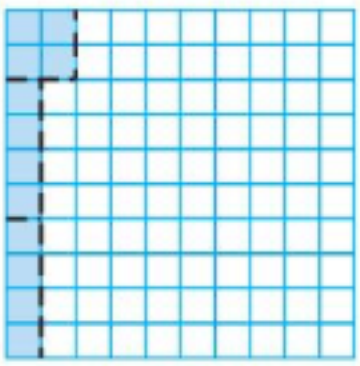
5. You have a piece of scrapbook paper that is 1.5 feet long. You cut it into pieces that are each 0.5 foot long. How many pieces of scrap book paper do you have now?

6. **YOU BE THE TEACHER** Your friend uses the model below and says $0.12 \div 0.04 = 0.03$. Is your friend correct? Explain.



7. **Writing** Write a real-life problem that involves dividing a decimal by another decimal.

8. **Modeling Real Life** Does the watercolor paint cost more than 3 times as much as the paintbrush? Explain.

Value Store Items	
Item	**Price**
Coloring book	$1.38
Pack of crayons	$0.49
Watercolor paint	$2.96
Paintbrush	$0.74

9. **DIG DEEPER!** You have 3.75 cups of popcorn kernels. You fill a machine with 0.25 cup of kernels 3 times each hour. How many hours pass before you run out of kernels?



Review & Refresh

Complete the equation. Identify the property shown.

10. $3 \times 14 = 14 \times$ _____

11. $8 \times (3 + 10) = (8 \times 3) + (8 \times$ _____$)$

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Name _____

Divide Decimals 7.7

Learning Target: Divide decimals by decimals.

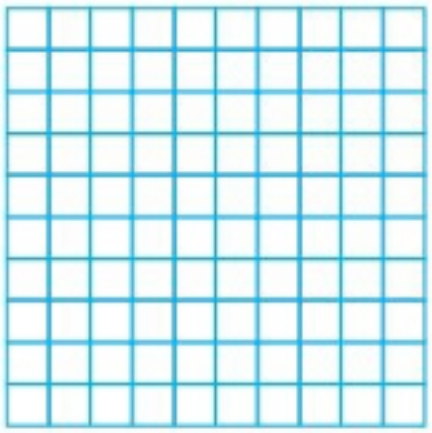
Success Criteria:

- I can multiply a divisor and a dividend by a power of 10 to make the divisor a whole number.
- I can place the decimal point in a quotient.
- I can divide a decimal by a decimal.

FLORIDA STANDARDS
MAFS.5.NBT.2.7

Explore and Grow

Use the model to find 0.96 ÷ 0.32.



Find 96 ÷ 32.

MP **Structure** How can multiplying by a power of 10 help you divide decimals?

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Think and Grow: Divide Decimals by Decimals

Key Idea To divide by a decimal, multiply the divisor by a power of 10 to make it a whole number. Multiply the dividend by the same power of 10. Then divide as you would with whole numbers.

Example Find $6.12 \div 1.8$. Estimate _____

Step 1: Multiply 1.8 by a power of 10 to make it a whole number. Then multiply 6.12 by the same power of 10.

$1.8 \times 10 =$ _____

$6.12 \times 10 =$ _____

Step 2: Place the decimal point in the quotient above the decimal point in the dividend.

$1.8\overline{)6.12} \longrightarrow 18\overline{)61.2}$

Step 3: Divide.

$$\begin{array}{r} \square. \\ 18\overline{)61.2} \\ -\ \square \\ \hline 72 \\ -\ \square \\ \hline \square \end{array}$$

So, $6.12 \div 1.8 =$ _____. Reasonable? _____ is close to _____. ✓

Example Find $2.43 \div 0.09$.

Step 1: Multiply 0.09 by a power of 10 to make it a whole number. Then multiply 2.43 by the same power of 10.

$0.09 \times 100 =$ _____

$2.43 \times 100 =$ _____

Step 2: Place the decimal point in the quotient above the decimal point in the dividend.

$0.09\overline{)2.43} \longrightarrow 9\overline{)243.}$

Step 3: Divide.

$$\begin{array}{r} \square. \\ 9\overline{)243} \\ -\ \square \\ \hline 63 \\ -\ \square \\ \hline \square \end{array}$$

So, $2.43 \div 0.09 =$ _____.

Show and Grow

Multiply the divisor by a power of 10 to make it a whole number. Then write the equivalent expression.

1. $3.5 \div 0.5$

2. $9.84 \div 2.4$

3. $4.68 \div 0.78$

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Name _____

Apply and Grow: Practice

Place a decimal point where it belongs in the quotient.

4. $28.47 \div 0.39 = 7\,3$

5. $75.85 \div 3.7 = 2\,0\,5$

6. $4.51 \div 4.1 = 1\,1$

Find the quotient. Then check your answer.

7. $1.5\overline{)7.5}$

8. $0.13\overline{)0.91}$

9. $2.4\overline{)2.88}$

10. $0.6\overline{)7.8}$

11. $3.6\overline{)4.32}$

12. $0.4\overline{)11.2}$

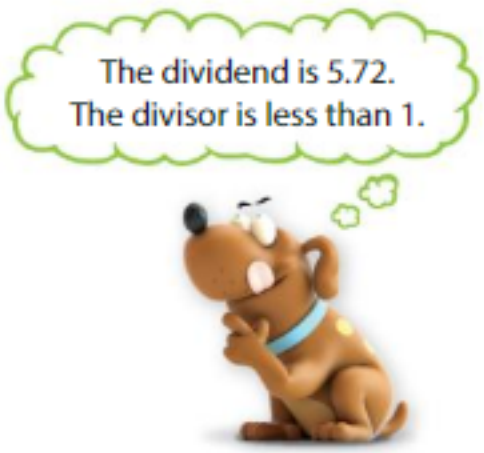
13. $40.42 \div 8.6 =$ _____

14. $7.2 \div 2.4 =$ _____

15. $5.76 \div 1.8 =$ _____

16. **YOU BE THE TEACHER** Descartes says $4.14 \div 2.3 = 1.8$. Is he correct? Explain.

17. **Logic** What can you conclude about Newton's quotient?



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Think and Grow: Modeling Real Life

Example A farmer sells a bag of papayas for $5.46. How much does the bag of papayas weigh?

Divide the price of the papayas by the price per pound to find how much the bag of papayas weighs.

Fruit or Vegetable	Price per Pound
Honeydew	$0.80
Papaya	$1.30
Pineapple	$0.63
Pumpkin	$0.45
Watermelon	$0.33



$5.46 \div 1.3 = ?$ Estimate _____

Step 1: Multiply 1.3 by a power of 10 to make it a whole number. Then multiply 5.46 by the same power of 10.

$1.3 \times 10 =$ _____

$5.46 \times 10 =$ _____

Step 2: Place the decimal point in the quotient above the decimal point in the dividend.

$1.3\overline{)5.46}$ $13\overline{)54.6}$

Step 3: Divide.

$$\begin{array}{r} \square. \\ 13\overline{)54.6} \\ -\square \\ \hline 26 \\ -\square \\ \hline \square \end{array}$$

$5.46 \div 1.3 =$ _____ Reasonable? _____ is close to _____. ✓

So, the bag of papayas weighs _____ pounds.

Show and Grow

Use the table above.

18. You buy a honeydew for $6.08. What is the weight of the honeydew?

19. You buy a pumpkin for $7.20 and a watermelon for $5.94. Does the watermelon or the pumpkin weigh more? How much more?



20. **DIG DEEPER!** You pay $5 for a pineapple and receive $2.48 in change. The inedible parts of the pineapple weigh 1.75 pounds. How many pounds of edible pineapple do you have? Explain.

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Name _____

Homework & Practice 7.7

Learning Target: Divide decimals by decimals.

Example Find 32.8 ÷ 0.4. Estimate 320 tenths ÷ 4 tenths = 80

Step 1: Multiply 0.4 by a power of 10 to make it a whole number. Then multiply 32.8 by the same power of 10.

$0.4 \times 10 =$ 4

$32.8 \times 10 =$ 328

Step 2: Place the decimal point in the quotient above the decimal point in the dividend.

$0.4\overline{)32.8} \longrightarrow 4\overline{)328.}$

Step 3: Divide.

$$\begin{array}{r} 82. \\ 4\overline{)328} \\ -\,32 \\ \hline 08 \\ -\,8 \\ \hline 0 \end{array}$$

So, 32.8 ÷ 0.4 = 82. Reasonable? 82 is close to 80. ✓

Multiply the divisor by a power of 10 to make it a whole number. Then write the equivalent expression.

1. 16.15 ÷ 1.9

2. 0.36 ÷ 0.09

3. 2.04 ÷ 1.7

Place a decimal point where it belongs in the quotient.

4. 81.27 ÷ 13.5 = 6 0 2

5. 5.76 ÷ 3.2 = 1 8

6. 47.15 ÷ 2.3 = 2 0 5

Find the quotient. Then check your answer.

7. $5.3\overline{)21.2}$

8. $0.03\overline{)76.38}$

9. $6.2\overline{)33.48}$

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Find the quotient. Then check your answer.

10. $0.63 \div 0.09 =$ _____

11. $10.53 \div 3.9 =$ _____

12. $33.8 \div 2.6 =$ _____

13. **Logic** Without calculating, determine whether $5.4 \div 0.9$ is greater than or less than 5.4. Explain.

14. **Structure** Explain how $35.64 \div 2.97$ compares to $3{,}564 \div 297$.

15. **Modeling Real Life** A farmer sells a bag of grapes for $5.88. How much do the grapes weigh?

Fruit or Vegetable	Price per Pound
Bananas	$0.58
Carrots	$1.00
Celery	$2.00
Asparagus	$0.64
Grapes	$2.80

16. **DIG DEEPER!** Descartes makes 2.5 times as many ounces of applesauce as Newton. Newton eats 8 ounces of his applesauce, and then divides the rest equally into 3 containers. How much applesauce is in each of Newton's containers?



Descartes makes 72.5 ounces of applesauce.

Review & Refresh

17. Write the number in two other forms.

Standard form:

Word form: two hundred thirty thousand, eighty-two

Expanded form:

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Name _____

Insert Zeros in the Dividend

7.8

Learning Target: Insert zeros in the dividend when dividing with decimals and whole numbers.

Success Criteria:

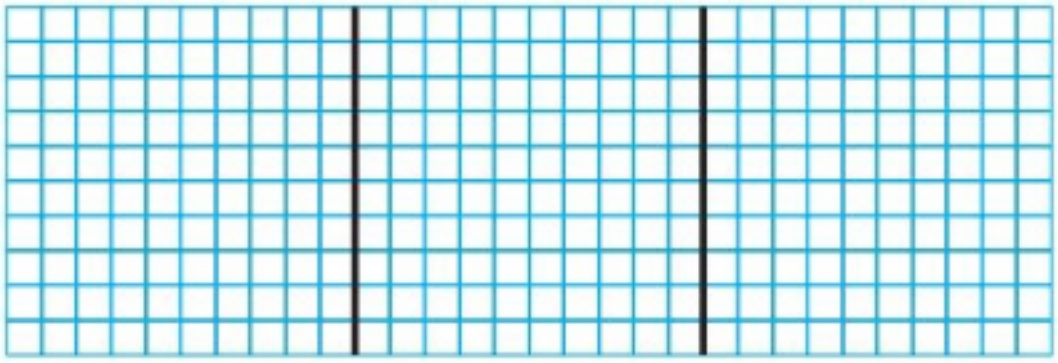
- I can explain when to insert one or more zeros in the dividend to find a quotient.
- I can insert one or more zeros in a dividend to find a quotient.
- I can recognize when a division problem is complete.

FLORIDA STANDARDS
MAFS.5.NBT.2.7

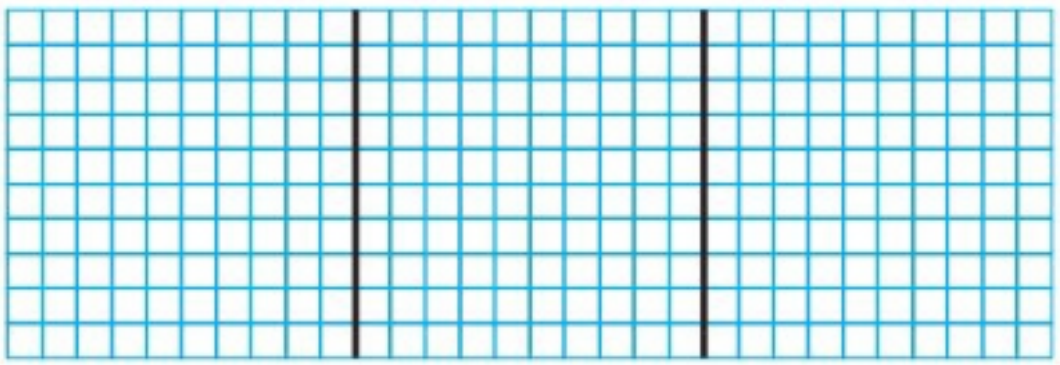
Explore and Grow

Use the model to find each quotient.

$3 \div 2$



$2.7 \div 2$



MP **Reasoning** Why is the number of digits in the quotients you found above different than the number of digits in the dividends?

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Think and Grow: Inserting Zeros in the Dividend

Example Find 52.6 ÷ 4.

Estimate _____

Step 1: Divide the tens and the ones.

$$\begin{array}{r} \square \\ 4\overline{)52.6} \\ -\square \\ \hline 12 \\ -\square \\ \hline \square \end{array}$$

When a dividend does not have enough digits to divide completely, insert zeros.



Step 2: Place the decimal point. Divide the tenths.

$$\begin{array}{r} \square. \\ 4\overline{)52.6} \\ -\ 4 \\ \hline 12 \\ -\ 12 \\ \hline 0\ 6 \\ -\square \\ \hline \square \end{array}$$

Step 3: Insert a zero in the dividend and continue to divide.

$$\begin{array}{r} \square. \\ 4\overline{)52.60} \\ -\ 4 \\ \hline 12 \\ -\ 12 \\ \hline 0\ 6 \\ -\ \ 4 \\ \hline 20 \\ -\square \\ \hline \square \end{array}$$

So, 52.6 ÷ 4 = _____.

Reasonable? _____ is close to _____. ✓

Example Find 1 ÷ 0.08.

Step 1: Multiply by a power of 10 to make the divisor a whole number.

0.08 × 100 = _____

1 × 100 = _____

Step 2: Place the decimal point in the quotient above the decimal point in the dividend.

$0.08\overline{)1.00} \longrightarrow 8\overline{)100.}$

Step 3: Divide. Insert a zero in the dividend and continue to divide.

$$\begin{array}{r} \square. \\ 8\overline{)100.0} \\ -\square \\ \hline 20 \\ -\square \\ \hline 4\ 0 \\ -\square \\ \hline \square \end{array}$$

So, 1 ÷ 0.08 = _____.

Show and Grow

Find the quotient. Then check your answer.

1. $0.5\overline{)85}$

2. $15\overline{)9.6}$

3. $0.24\overline{)2.52}$

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Name _____

Apply and Grow: Practice

Place a decimal point where it belongs in the quotient.

4. $3.24 \div 0.48 = 6\,7\,5$

5. $35 \div 0.5 = 7\,0$

6. $12.8 \div 2.5 = 5\,1\,2$

Find the quotient. Then check your answer.

7.
$2.4\overline{)0.84}$

8.
$0.32\overline{)2.08}$

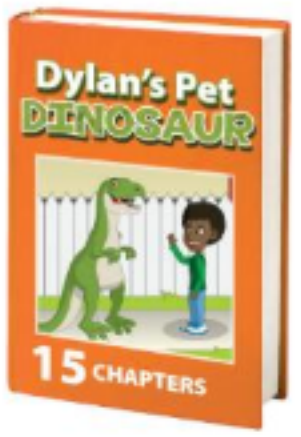
9.
$4\overline{)45.8}$

10. $9 \div 1.2 =$ _____

11. $3.5 \div 2.5 =$ _____

12. $1.8 \div 12 =$ _____

13. You read 2.5 chapters of the book each night. How many nights does it take you to finish the book?



14. MP **Precision** Why does Newton place zeros to the right of the dividend but Descartes does not?



```
      23.25
4.4)102.300
  − 88
    143
  − 132
     110
   −  88
      220
   − 220
        0
```



```
     4.
5.6)22.4
  − 22 4
       0
```

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Think and Grow: Modeling Real Life



Example The John Muir Trail in Yosemite National Park is 210 miles long. A hiker completes the trail in 20 days by hiking the same distance each day. How many miles does the hiker travel each day?

Divide 210 miles by 20 to find how many miles the hiker travels each day.

Step 1: Divide the tens and the ones.

$$\begin{array}{r} \square \\ 20\overline{)210} \\ -\square\downarrow \\ \hline 10 \\ -\square \\ \hline \square \end{array}$$

Step 2: Place the decimal point. Insert a zero in the dividend and continue to divide.

$$\begin{array}{r} \square. \\ 20\overline{)210.0} \\ -\ 20\downarrow \\ \hline 10 \\ -\ 10 \\ \hline 10\ 0 \\ -\square \\ \hline \square \end{array}$$

So, the hiker travels _____ miles each day.

Show and Grow

15. A box of 15 tablets weighs 288 ounces. Each tablet weighs the same number of ounces. What is the weight of each tablet?

16. Which bag of dog food costs less per pound? Explain why it makes sense to write each quotient as a decimal in this situation.



16 lb: $20 40 lb: $48

17. **DIG DEEPER!** A farmer sells a pound of rice for $0.12 and a pound of oats for $0.08. Can you buy more pounds of rice or oats with $3? How much more? Explain.

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Name _____

Homework & Practice 7.8

Learning Target: Insert zeros in the dividend when dividing with decimals and whole numbers.

Example Find $5 \div 0.8$. Estimate 48 tenths ÷ 8 tenths = 6

Step 1: Multiply by a power of 10 to make the divisor a whole number.

$0.8 \times 10 =$ 8

$5 \times 10 =$ 50

Step 2: Place the decimal point in the quotient above the decimal point in the dividend.

$0.8\overline{)5.0} \longrightarrow 8\overline{)50.}$

Step 3: Divide. Insert a zero in the dividend and continue to divide.

$$\begin{array}{r} 6.25 \\ 8\overline{)50.00} \\ -\,48 \\ \hline 20 \\ -\,16 \\ \hline 40 \\ -\,40 \\ \hline 0 \end{array}$$

So, $5 \div 0.8 =$ 6.25. Reasonable? 6.25 is close to 6. ✓

Place a decimal point where it belongs in the quotient.

1. $9.3 \div 0.31 = 3\,0$

2. $10 \div 0.8 = 1\,2\,5$

3. $0.76 \div 0.25 = 3\,0\,4$

Find the quotient. Then check your answer.

4. $0.8\overline{)30}$

5. $15\overline{)91.2}$

6. $35\overline{)97.3}$

7. $3.57 \div 0.84 =$ _____

8. $20.2 \div 4 =$ _____

9. $1.74 \div 0.25 =$ _____

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10. A painter has 5 gallons of paint to use in a room. He uses 2.5 gallons of paint for 1 coat. How many coats can he paint?

11. **YOU BE THE TEACHER** Your friend says he can find $5.44 \div 0.64$ by dividing both the divisor and dividend by 0.01 to make an equivalent problem with a whole-number divisor. Is he correct? Explain.

12. **Writing** Explain when you need to insert a zero in the dividend when dividing.

13. **Modeling Real Life** You cut a 12-foot-long streamer into 8 pieces of equal length. How long is each piece?

14. **DIG DEEPER!** How many days longer does the bag of dog food last for the 20-pound dog than the 40-pound dog? Explain.





20-pound dog:
eats 1.25 cups
in all each day



40-pound dog:
eats 1.25 cups
twice each day

Review & Refresh

Find the sum. Check whether your answer is reasonable.

15. $1.7 + 6.8 =$ _____

16. $150.23 + 401.79 =$ _____

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Name _____

Problem Solving: Decimal Operations

7.9

Learning Target: Solve word problems involving decimals.

Success Criteria:

- I can understand a problem.
- I can make a plan to solve.
- I can solve a problem.

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MAFS.5.NBT.2.7

Explore and Grow

Make a plan to solve the problem.

Three friends take a taxi ride that costs $4.75 per mile. They travel 10.2 miles and tip the driver $8. They share the total cost equally. How much does each friend pay?



MP **Reasoning** Explain how you can work backward to check your answer.

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Think and Grow: Problem Solving: Decimal Operations

Example You spend $67.45 on the video game controller, the gaming headset, and 3 video games. The video games each cost the same amount. How much does each video game cost?



Understand the Problem

What do you know?

- You spend a total of $67.45.
- The controller costs $15.49 and the headset costs $21.99.
- You buy 3 video games that each cost the same amount.

What do you need to find?

- You need to find the cost of each video game.

Make a Plan

How will you solve?

Write and solve an equation to find the cost of each video game.

Solve

Cost of each game	= (	Total spent	−	Cost of controller	−	Cost of headset	) ÷	Number of games

Let v represent the cost of each video game.

$v = (67.45 - 15.49 - 21.99) \div 3$

$= \_\_\_\_ \div 3$

$= \_\_\_\_$

So, each video game costs _____.

Show and Grow

1. Explain how you can check whether your answer above is reasonable.

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Name _____

Apply and Grow: Practice

Understand the problem. What do you know? What do you need to find? Explain.

2. Your friend pays $84.29 for a sewing machine and 6 yards of fabric. The sewing machine costs $59.99. How much does each yard of fabric cost?

3. There are 25.8 grams of fiber in 3 cups of cooked peas. There are 52.5 grams of fiber in 5 cups of avocados. Which contains more fiber in 1 cup, cooked peas or avocados?

Understand the problem. Then make a plan. How will you solve? Explain.

4. Your friend makes a hexagonal frame with a perimeter of 7.5 feet. You make a triangular frame with a perimeter of 5.25 feet. Whose frame has longer side lengths? How much longer?

5. You spend $119.92 on the wetsuit, the snorkeling equipment, and 2 research books. The books each cost the same amount. How much does each book cost?



6. **DIG DEEPER!** You pour goop into molds and bake them to make plastic lizards. You run out of goop and go shopping for more. Which package costs less per ounce of goop? Explain.





Each bottle: 2.25 fl oz



Each bottle: 1.8 fl oz

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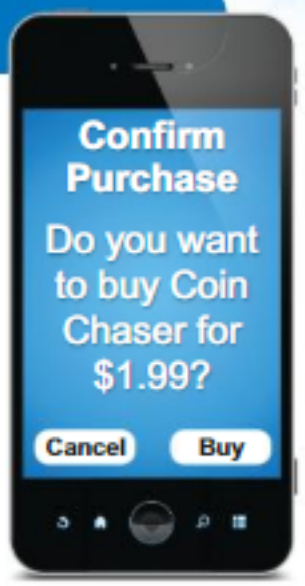
Think and Grow: Modeling Real Life



Example Descartes spends $16.40 on the game app, an e-book, and 5 songs. The e-book costs 4 times as much as the game app. The songs each cost the same amount. How much does each song cost?

Think: What do you know? What do you need to find? How will you solve?

Step 1: Multiply the cost of the app by 4 to find the cost of the e-book.

$1.99 \times 4 = 7.96$ The e-book costs _____.

Step 2: Write and solve an equation to find the cost of each song.

$$\text{Cost of each song} = (\text{Total spent} - \text{Cost of game app} - \text{Cost of e-book}) \div \text{Number of songs}$$

Let c represent the cost of each song.

$c = (16.40 - 1.99 - 7.96) \div 5$

$= \_\_\_\_ \div 5$

$= \_\_\_\_$ So, each song costs $____.

Show and Grow

7. You spend $2.24 on a key chain, a bookmark, and 2 pencils. The key chain costs 3 times as much as the bookmark. The pencils each cost the same amount. How much does each pencil cost?



8. Newton buys an instant-print camera, a camera bag, and 2 packs of film. He pays $113.96 after using a $5 coupon. The camera costs $69.40, which is 5 times as much as the camera case. How much does each pack of film cost?

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Name _____

Homework & Practice 7.9

Learning Target: Solve word problems involving decimals.

Example Newton has 1.5 gallons of gasoline in his lawn mower. He adds 2.25 gallons of gasoline to it. He uses the same amount of gasoline each of 15 times that he mows his yard. How much gasoline does he use each time?

Think: What do you know? What do you need to find? How will you solve?

Amount of gasoline used each time	=	(Amount of gasoline to start	+	Amount of gasoline added)	÷	Number of times mowed

Let g represent the amount of gasoline he uses each time.

$g = (1.5 + 2.25) \div 15$

$= \underline{3.75} \div 15$

$= \underline{0.25}$

So, he uses 0.25 gallon of gasoline each time.

Understand the problem. What do you know? What do you need to find? Explain.

1. A 20-ounce bottle of ketchup costs $2.80. A 14-ounce bottle of mustard costs $2.38. Which item costs less per ounce? How much less?

2. Gymnast A scores the same amount in each of his 4 events. Gymnast B scores the same amount in each of his 3 events. Which gymnast scores more in each of his events? How much more?

Gymnast	Total Points
A	33.56
B	25.05

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Understand the problem. Then make a plan. How will you solve? Explain.

3. Three children's tickets to the circus cost $53.85. Two adult tickets to the circus cost $63.90. How much more does 1 adult ticket cost than 1 children's ticket?

4. A chef at a restaurant buys 50 pounds of red potatoes for $27.50 and 30 pounds of sweet potatoes for $22.50. Which kind of potato costs more per pound? How much more?

5. **Modeling Real Life** You download 2 music videos, a TV series, and a movie for $42.95 total. The TV series costs 2 times as much as the movie. How much does each music video cost?



6. DIG DEEPER! Which item costs more per ounce? How much more?



Review & Refresh

Find the quotient

7. 4,000 ÷ 20 = _____

8. 900 ÷ 300 = _____

9. 5,600 ÷ 800 = _____

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Name _____

Performance Task 7

1. Multiple teams adopt different sections of a state highway to clean. The teams must clean both sides of their adopted section of the highway.

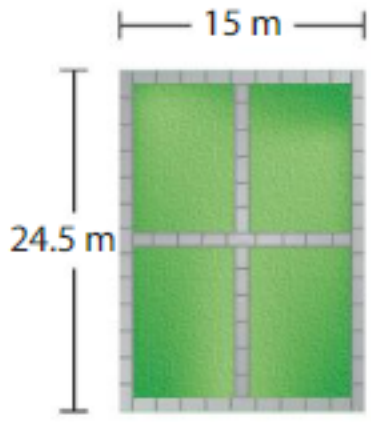


Highway Adoptions			
Team	**Number of Members**	**Section Distance (miles)**	**Litter Collected (pounds)**
A	5	2.0	42.75
B	16	20.8	184
C	9	14.4	88.2

a. The teams clean their section of the highway over 4 days. They clean the same distance each day. How many miles of the highway does each team clean each day?

b. Each team divides their daily distance equally among each team member. Which team's members clean the greatest distance each day?

c. The team that collects the greatest amount of litter per team member wins a prize. Which team wins the prize?



2. In a community, 25 people volunteer to clean the rectangular park shown. The park is divided into sections of equal area. One section is assigned to each volunteer. What is the area of the section that each volunteer cleans? What is one possible set of dimensions for each section?

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Race Around the World: Division

Directions:

1. Players take turns.
2. On your turn, flip a Race Around the World: Division Card and find the quotient.
3. Move your piece to the next number on the board that is highlighted in the quotient.
4. The first player to make it back to North America wins!



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Name _____

Chapter Practice 7

7.1 Division Patterns with Decimals

Find the quotient.

1. $25 \div 10^2 =$ _____

2. $1.69 \div 0.01 =$ _____

3. $681 \div 10^3 =$ _____

4. $5.7 \div 0.1 =$ _____

5. $200 \div 0.01 =$ _____

6. $41.3 \div 10 =$ _____

Find the value of k.

7. $74 \div k = 7{,}400$

8. $k \div 0.1 = 8.1$

9. $0.35 \div k = 0.035$

7.2 Estimate Decimal Quotients

Estimate the quotient.

10. $9.6 \div 2$

11. $37.2 \div 6.4$

12. $44.8 \div 4.7$

13. $78.2 \div 10.8$

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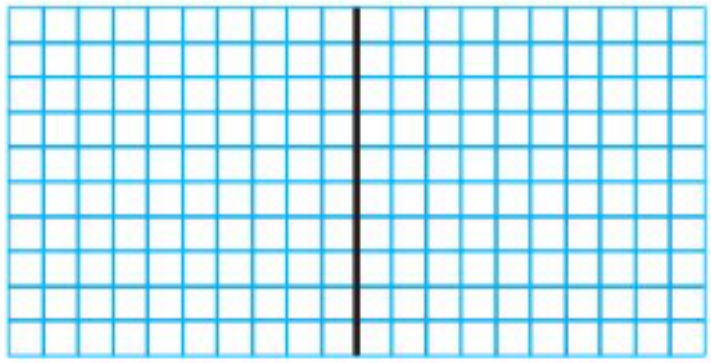
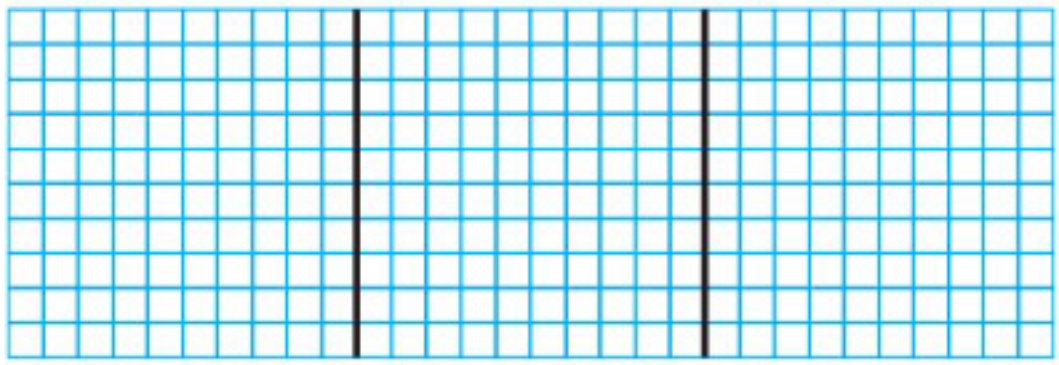
7.3 Use Models to Divide Decimals by Whole Numbers

Use the model to find the quotient.

14. $1.4 \div 2$



15. $2.85 \div 3$



Use a model to find the quotient.

16. $1.28 \div 4$

17. $3.5 \div 5$

7.4 Divide Decimals by One-Digit Numbers

Find the quotient. Then check your answer.

18. $3\overline{)14.1}$

19. $6\overline{)67.68}$

20. $8\overline{)105.6}$

21. MP **Number Sense** Evaluate $(84.7 + 79.8) \div 7$.

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7.5 Divide Decimals by Two-Digit Numbers

Find the quotient. Then check your answer.

22. $32\overline{)45.12}$

23. $15\overline{)9.15}$

24. $73\overline{)102.2}$

25. $17.4 \div 87 =$ _____

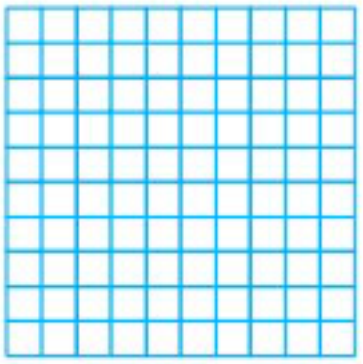
26. $245.82 \div 51 =$ _____

27. $5.88 \div 42 =$ _____

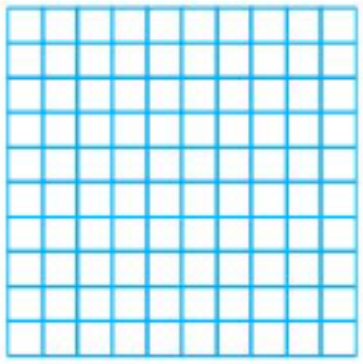
7.6 Use Models to Divide Decimals

Use the model to find the quotient.

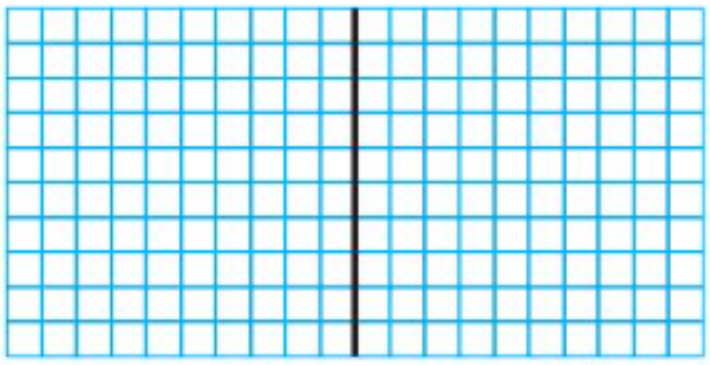
28. $0.9 \div 0.45 =$ _____



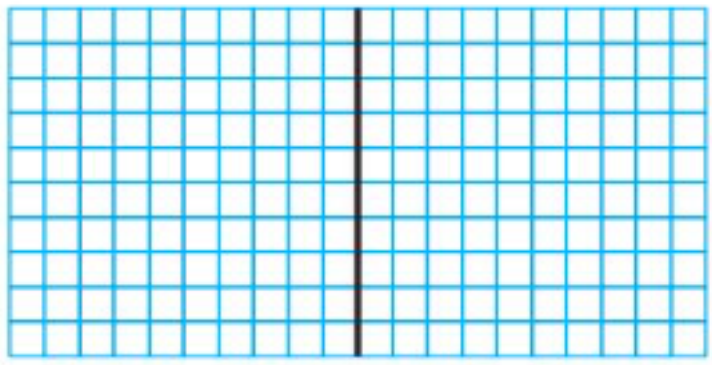
29. $0.1 \div 0.05 =$ _____



30. $1.6 \div 0.4 =$ _____



31. $1.9 \div 0.38 =$ _____



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7.7 Divide Decimals

Find the quotient. Then check your answer.

32. $2.57\overline{)20.56}$

33. $4.7\overline{)16.92}$

34. $5.3\overline{)63.6}$

7.8 Insert Zeros in the Dividend

35. $4\overline{)36.2}$

36. $4.8\overline{)85.2}$

37. $12\overline{)52.2}$

38. $5 \div 0.8 =$ _____

39. $23.7 \div 6 =$ _____

40. $138.4 \div 16 =$ _____

7.9 Problem Solving: Decimal Operations

41. You spend $28.08 on the fabric scissors, buttons, and two craft kits. The kits each cost the same amount. How much does each kit cost?



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Name _____

Cumulative Practice 1–7

1. Which statement is true?

Ⓐ $(2 \times 4) + 4 \div 8 \stackrel{?}{=} 2$

Ⓑ $(2 \times 4 + 4) \div 8 \stackrel{?}{=} 2$

Ⓒ $2 \times (4 + 4) \div 8 \stackrel{?}{=} 2$

Ⓓ $2 \times 4 + (4 \div 8) \stackrel{?}{=} 2$

---

2. You round 23×84 and get an underestimate. How did you estimate?

Ⓐ 20×80

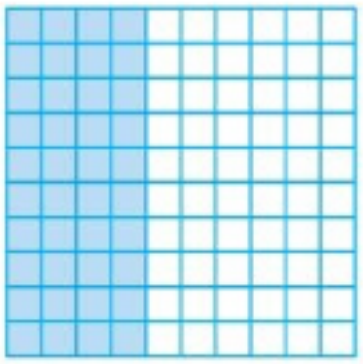
Ⓑ 30×90

Ⓒ 25×80

Ⓓ 25×90

---

3. Which expressions have a product that is shown?



☐ 9×0.5

☐ 8×0.05

☐ 2×0.2

☐ 4×0.1

☐ 0.01×40

☐ 50×0.8

---

4. What number is $\frac{1}{10}$ of 800?

Ⓐ 0.8

Ⓑ 8

Ⓒ 80

Ⓓ 8,000

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5. Which number divided by 0.01 is 14 more than 37?

Ⓐ 0.51

Ⓑ 5.1

Ⓒ 51

Ⓓ 5,100

---

6. Which expressions have a quotient of 40?

☐ 2,800 ÷ 70

☐ 160 ÷ 4

☐ 1,200 ÷ 300

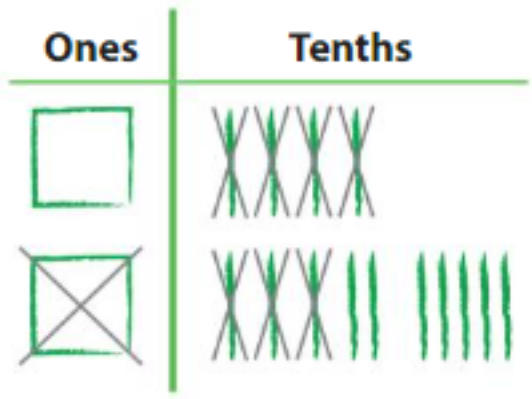
☐ 3,600 ÷ 90

☐ 200 ÷ 50

☐ 8,000 ÷ 200

---

7. Which equation is shown by the quick sketch?



Ⓐ $1.4 - 1.7 \stackrel{?}{=} 1.7$

Ⓑ $3.4 - 1.7 \stackrel{?}{=} 1.7$

Ⓒ $2.14 - 1.7 \stackrel{?}{=} 1.7$

Ⓓ $3.1 - 1.0 \stackrel{?}{=} 1.7$

---

8. What is the value of k?

$$0.036 \times k = 36$$

Ⓐ 10

Ⓑ 10^3

Ⓒ 100

Ⓓ 36

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9. What is the quotient of 11.76 and 8?

Ⓐ 1.47 Ⓑ 1.97

Ⓒ 14.7 Ⓓ 94.08

---

10. Newton wins a race by seven thousandths of a second. What is this number in standard form?

Ⓐ 0.007 Ⓑ 0.07

Ⓒ 0.7 Ⓓ 7,000

---

11. Evaluate $30 - (9 + 6) \div 3$.

Ⓐ 5 Ⓑ 19

Ⓒ 9 Ⓓ 25

---

12. A food truck owner sells 237 gyros in 1 day. Each gyro costs $7. How much money does the owner collect in 1 day?

Ⓐ $659 Ⓑ $1,419

Ⓒ $1,659 Ⓓ $11,249



---

13. What is the quotient of 4,521 and 3?

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14. What is the value of b?

$$10^4 = 10^b \times 10$$

Ⓐ 3

Ⓑ 4

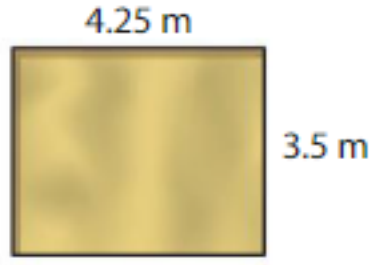
Ⓒ 5

Ⓓ 10

---

15. **Part A** What is the area of the sandbox?

Think
Solve
Explain



Part B The playground committee wants to make the area of the playground 2 times the original area. What is the new area? Explain.

---

16. Which expressions have a product of 1,200?

☐ 30×40

☐ 12×10^2

☐ 60×200

☐ $2 \times 6{,}000$

☐ 40×10^3

☐ 120×10

---

17. A 5-day pass to a theme park costs $72.50. A 2-day pass to the same park costs $99.50. How much more does the 2-day pass cost each day than the 5-day pass each day?

Ⓐ $14.50

Ⓑ $35.25

Ⓒ $49.75

Ⓓ $64.25

---

18. Which expressions have a quotient with the first digit in the tens place?

☐ 4,536 ÷ 56

☐ 6,750 ÷ 45

☐ 2,403 ÷ 89

☐ 1,496 ÷ 17

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Name _____

STEAM Performance Task 1–7

You experiment with levers for your school's science fair.



1. You balance the seesaw lever by placing different weights on either side at different distances from the middle. You find the formula for balancing the seesaw lever is (left weight) × (left distance) = (right weight) × (right distance). You test the formula using various combinations of weights.

a. Use the formula to complete the table for the 2nd and 3rd attempts.

b. For your 4th attempt, you have up to 25 pounds in weights to place on each side of the lever. Choose a whole pound weight for the left side and balance the lever to complete the table.

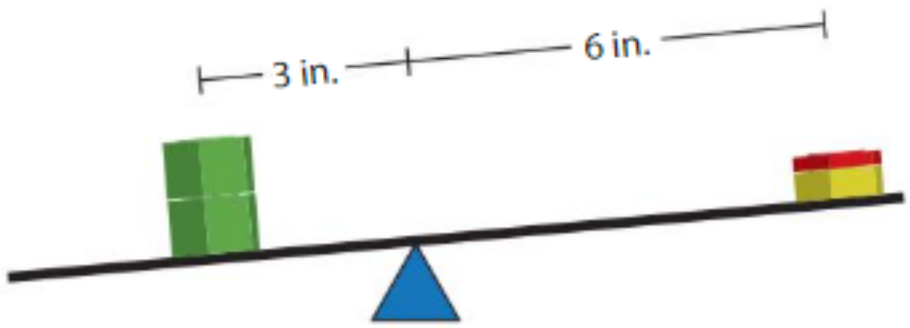
Balanced Seesaw Lever				
Attempt	**Left Weight (pounds)**	**Left Distance (inches)**	**Right Weight (pounds)**	**Right Distance (inches)**
1st	10	10	5	20
2nd	$15\frac{1}{2}$	7		14
3rd	30		50	5.25
4th		6.5		13

c. The total length of your seesaw lever is 40 inches. Can you balance a 50-pound weight with a 1-pound weight? Explain.

d. For your science fair display, you balance the lever by placing another gram weight on the right side. Which gram weight should you use?



Gram weights



e. How can you apply what you learn from the science fair project to a playground?

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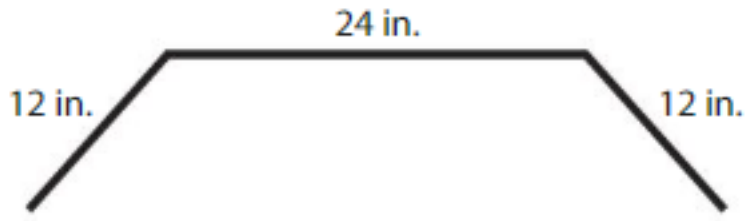
You help set up tables for the science fair. There are 93 science fair displays. You use the display boards to determine how many tables to use.

2. Each display board opens up to form three sides of a trapezoid as shown.

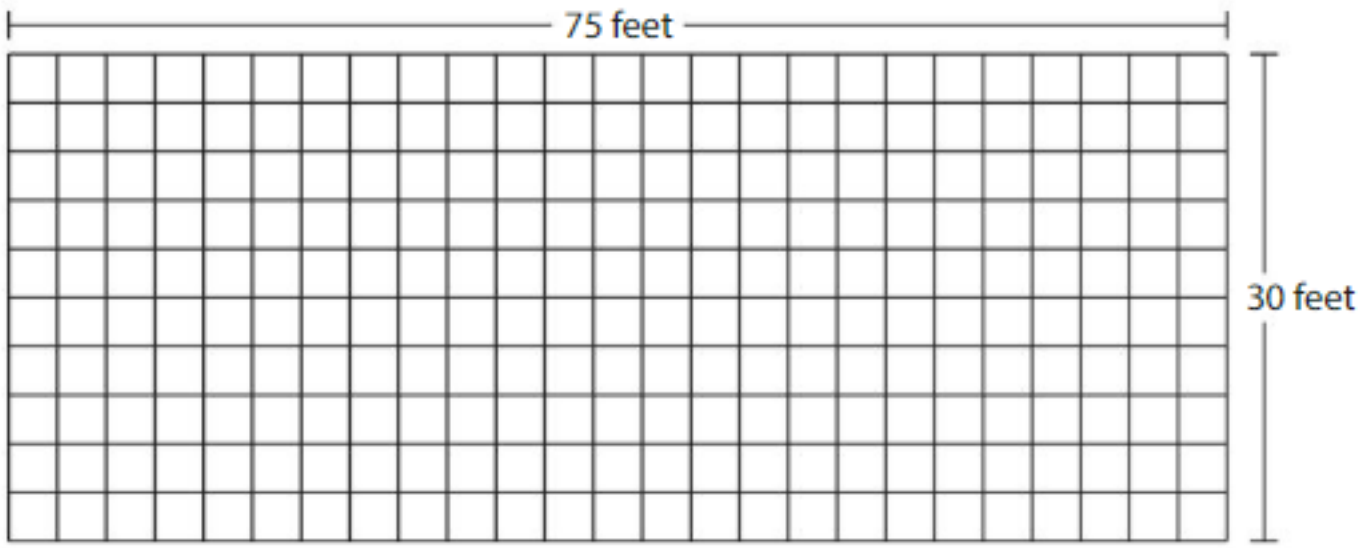


a. How much room do you think each display board needs to open up? Explain.

b. You place the display boards next to each other on 12-foot long tables. How many display boards can you fit on one table?

c. You use one table for snacks and one table for award ribbons. What is the least number of tables you can use? Explain.

d. The diagram shows the room where the science fair is held. Each table for the science fair is 3 feet wide. Your teacher says the ends of the tables can touch to save space. Complete the diagram to arrange the tables so that visitors and judges can see each display board.





3. Use the Internet or some other resource to learn about other types of science fair projects. Describe one interesting science fair project you want to complete.

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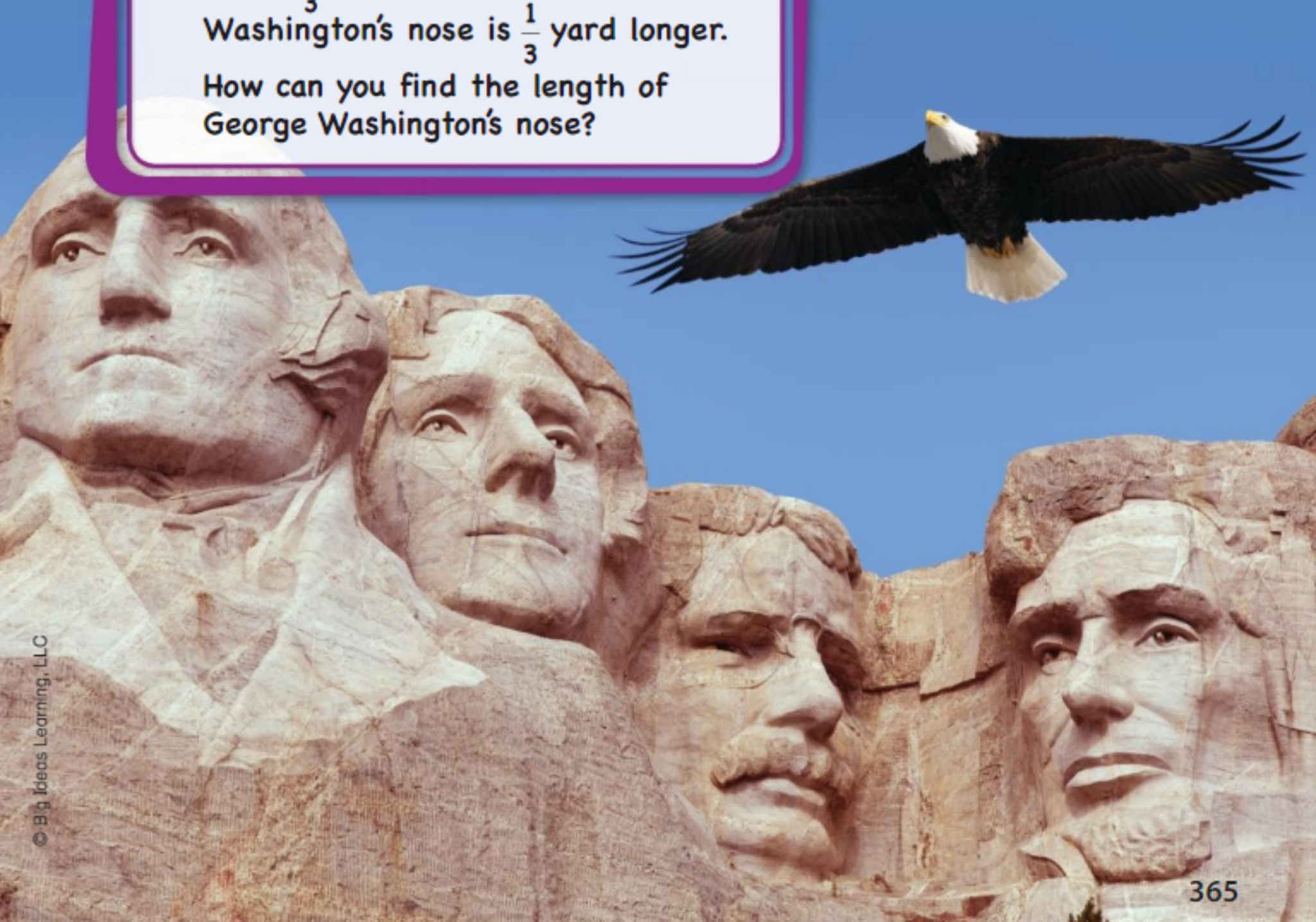
8 Add and Subtract Fractions

Chapter Learning Target:
Understand adding and subtracting fractions.

Chapter Success Criteria:
- I can find the factors of a number.
- I can write equivalent fractions.
- I can add and subtract fractions.
- I can solve a problem using fractions.

- The Mount Rushmore National Memorial is carved into the side of a mountain in South Dakota. Which four American presidents does the memorial depict?
- Three of the presidents' noses are each $6\frac{2}{3}$ yards long. George Washington's nose is $\frac{1}{3}$ yard longer.

How can you find the length of George Washington's nose?



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Name _____

8 Vocabulary

Review Words

decimal fraction
mixed number
unit fraction

Organize It

Use the review words to complete the graphic organizer.

$\frac{1}{8}$	$\frac{3}{10}$	$4\frac{2}{3}$
$\frac{1}{15}$	$\frac{27}{100}$	$7\frac{5}{8}$
$\frac{1}{9}$	$\frac{98}{100}$	$2\frac{1}{5}$

Define It

Use your vocabulary cards to complete each definition.

1. simplest form: When the _____ and denominator of a _____ have no _____ factors other than _____

2. common denominator: A _____ that is the _____ of _____ or more _____

3. proper fraction: A fraction _____ than _____

4. improper fraction: A fraction _____ than _____

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Chapter 8 Vocabulary Cards

common denominator

improper fraction

proper fraction

simplest form

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A fraction greater than 1

$\frac{3}{2}, \frac{6}{3}, \frac{9}{4}$

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A number that is the denominator of two or more fractions

$\frac{3}{4}$ $\frac{2}{4}$

4 is a common denominator for $\frac{3}{4}$ and $\frac{2}{4}$.

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When the numerator and denominator of a fraction have no common factors other than 1

$\frac{2}{6} = \frac{1}{3}$

simplest form

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A fraction less than 1

$\frac{1}{2}, \frac{2}{3}, \frac{3}{4}$

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Name _____

Simplest Form 8.1

Learning Target: Write fractions in simplest form.

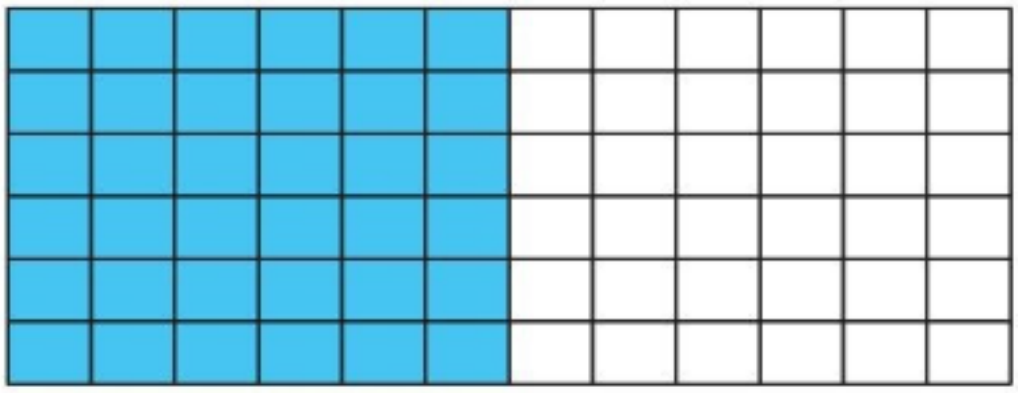
Success Criteria:

- I can find the common factors of two numbers.
- I can write equivalent fractions.
- I can write a fraction in simplest form.

FLORIDA STANDARDS
MAFS.5.NF.1.1

Explore and Grow

Use the model to write as many fractions as possible that are equivalent to $\frac{36}{72}$ but have numerators less than 36 and denominators less than 72.



Which of your fractions has the fewest equal parts? Explain.

MP **Construct Arguments** When might it be helpful to write $\frac{48}{72}$ as $\frac{2}{3}$ in a math problem?

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Think and Grow: Simplest Form

Key Idea When the numerator and denominator of a fraction have no common factors other than 1, the fraction is in **simplest form**. To write a fraction in simplest form, divide the numerator and the denominator by the greatest of their common factors.

When you write a fraction in simplest form, you *simplify* the fraction.



Example Write $\frac{6}{8}$ in simplest form.

Step 1: Find the common factors of 6 and 8.

Factors of 6: ①, ②, 3, 6

Factors of 8: ①, ②, 4, 8

The common factors of 6 and 8 are _____ and _____.

Step 2: Write an equivalent fraction by dividing the numerator and the denominator by the greatest of the common factors.

Simplest form uses as few equal parts of a whole as possible to represent a fraction.

$$\frac{6}{8} = \frac{6 \div \square}{8 \div \square} = \frac{\square}{\square}$$





Because 3 and _____ have no common factors other than 1, _____ is in simplest form.

Show and Grow

1. Use the model to write $\frac{2}{4}$ in simplest form.



2. Write $\frac{8}{12}$ in simplest form.

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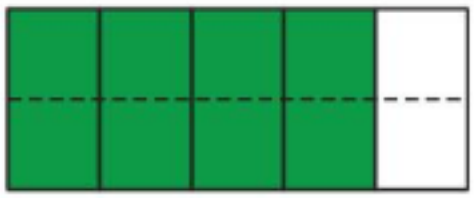
Name _____

Apply and Grow: Practice

Use the model to write the fraction in simplest form.

3. $\frac{8}{10} = \frac{\square}{\square}$



4. $\frac{5}{15} = \frac{\square}{\square}$



5. $\frac{10}{12} = \frac{\square}{\square}$



Write the fraction in simplest form.

6. $\frac{3}{6}$

7. $\frac{2}{10}$

8. $\frac{6}{8}$

9. $\frac{7}{14}$

10. $\frac{10}{100}$

11. $\frac{12}{4}$

12. Three out of nine baseball players are in the outfield. In simplest form, what fraction of the players are in the outfield?



13. **YOU BE THE TEACHER** Your friend writes $\frac{2}{6}$ in simplest form. Is your friend correct? Explain.

$$\frac{2}{6} = \frac{2}{6 \div 2} = \frac{2}{3}$$

14. **MP Reasoning** The numerator and denominator of a fraction have 1, 2, and 4 as common factors. After you divide the numerator and denominator by 2, the fraction is still not in simplest form. Why?

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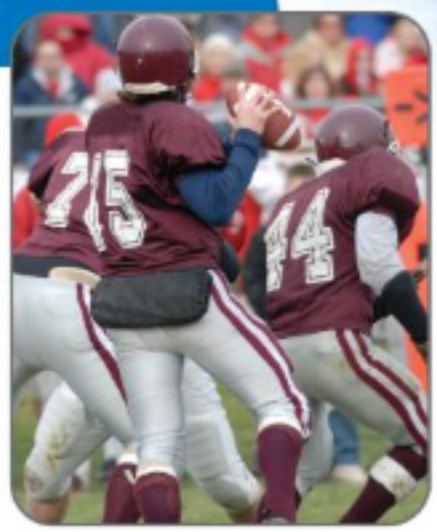
Think and Grow: Modeling Real Life



Example A quarterback passes the ball 45 times during a game. The quarterback completes 35 passes. What fraction of the passes, in simplest form, does the quarterback *not* complete?

Find the number of passes that are not completed by subtracting the pass completions from the total number of passes.

$45 - 35 = 10$

Write a fraction for the passes the quarterback does not complete.

$\frac{10}{45}$ ← passes the quarterback does not complete
$\frac{}{45}$ ← total number of passes

Find common factors of 10 and 45. Then write an equivalent fraction by dividing the numerator and the denominator by the greatest of the common factors.

Factors of 10: ①, 2, ⑤, 10

Factors of 45: ①, 3, ⑤, 9, 15, 45

$$\frac{10}{45} = \frac{10 \div \square}{45 \div \square} = \frac{\square}{\square}$$



The quarterback does not complete _____ of the passes.

Show and Grow

15. There are 24 students in your class. Four of the students have blue eyes. What fraction of the class, in simplest form, do *not* have blue eyes?

16. **DIG DEEPER!** A student answers 4 out of 12 questions on a test incorrectly. What fraction of the questions, in simplest form, does the student answer incorrectly? Interpret the fraction.

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Name _____

Homework & Practice 8.1

Learning Target: Write fractions in simplest form.

Example Write $\frac{4}{16}$ in simplest form.

Step 1: Find the common factors of 4 and 16.

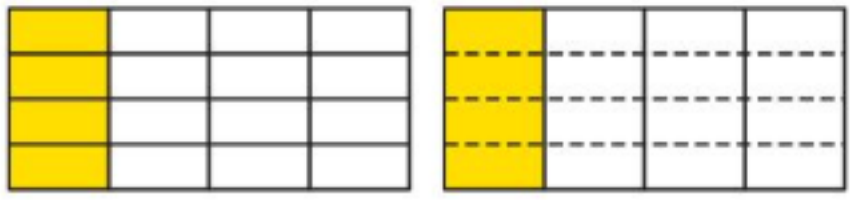
Factors of 4: ①, ②, ④

Factors of 16: ①, ②, ④, 8, 16

The common factors of 4 and 16 are 1, 2, and 4.

Step 2: Write an equivalent fraction by dividing the numerator and the denominator by the greatest of the common factors.

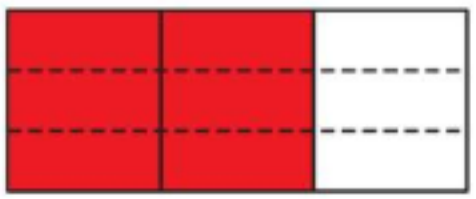
$$\frac{4}{16} = \frac{4 \div \boxed{4}}{16 \div \boxed{4}} = \frac{\boxed{1}}{\boxed{4}}$$



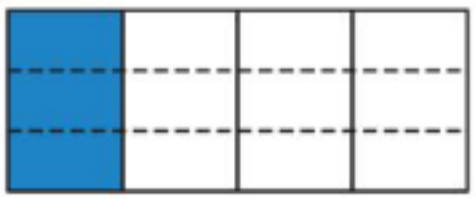
Because 1 and 4 have no common factors other than 1, $\frac{1}{4}$ is in simplest form.

Use the model to write the fraction in simplest form.

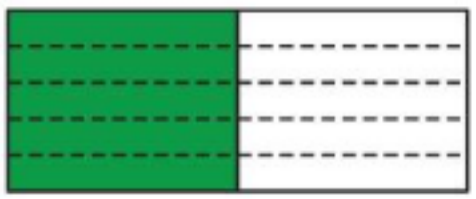
1. $\frac{6}{9} = \frac{\square}{\square}$



2. $\frac{3}{12} = \frac{\square}{\square}$



3. $\frac{5}{10} = \frac{\square}{\square}$



Write the fraction in simplest form.

4. $\frac{4}{8}$

5. $\frac{5}{100}$

6. $\frac{20}{15}$

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7. There are 18 students in your class. Six of the students pack their lunch. In simplest form, what fraction of the students in your class pack their lunch?



8. **Reasoning** Why do you have to divide a numerator and a denominator by the greatest of their common factors to write a fraction in simplest form?

9. **Writing** Explain how you know when a fraction is in simplest form.

10. **Open-Ended** Write a fraction in which the numerator and the denominator have 1, 2, 4, and 8 as common factors. Then write the fraction in simplest form.

11. **Modeling Real Life** A flight attendant has visited 30 of the 50 states. What fraction of the states, in simplest form, has he *not* visited?

12. **DIG DEEPER!** A bin has red, orange, yellow, green, blue, and purple crayons. There are 4 of each color in the bin. In simplest form, what fraction of the crayons are red, orange, yellow, or green?

Review & Refresh

Estimate the sum or difference.

13. $598.44 - 45.61 =$ _____

14. $93.8 + 4.3 =$ _____

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Name _____

8.2 Estimate Sums and Differences of Fractions

Learning Target: Estimate sums and differences of fractions.

Success Criteria:

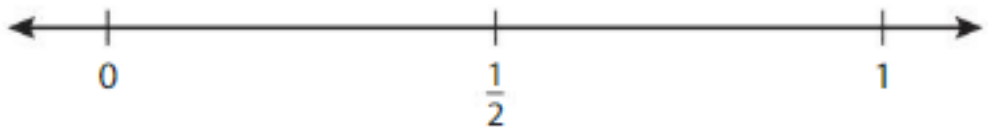
- I can use a number line and benchmarks to estimate a fraction.
- I can use mental math and benchmarks to estimate a fraction.
- I can use benchmarks to estimate sums and differences of fractions.

FLORIDA STANDARDS

MAFS.5.NF.1.1
MAFS.5.NF.1.2

Explore and Grow

Plot $\frac{7}{12}$, $\frac{5}{6}$, and $\frac{1}{10}$ on the number line.



How can you estimate $\frac{7}{12} + \frac{5}{6}$?

How can you estimate $\frac{2}{3} - \frac{1}{10}$?

MP **Reasoning** Write two fractions that have a sum of about $\frac{1}{2}$. Then write two fractions that have a difference of about $\frac{1}{2}$. Explain your reasoning.

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Think and Grow: Estimate Sums and Differences

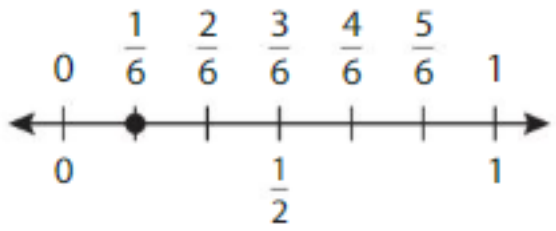
You have used the benchmarks $\frac{1}{2}$ and 1 to compare fractions. You can use the benchmarks 0, $\frac{1}{2}$, and 1 to estimate sums and differences of fractions.

Example Estimate $\frac{1}{6} + \frac{5}{8}$.

Step 1: Use a number line to estimate each fraction.

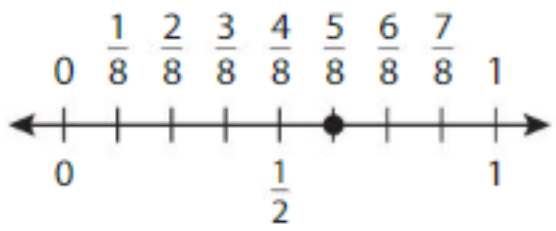
$\frac{1}{6}$ is between 0 and $\frac{1}{2}$,

but is closer to _____.



$\frac{5}{8}$ is between $\frac{1}{2}$ and 1,

but is closer to _____.



Step 2: Estimate the sum.

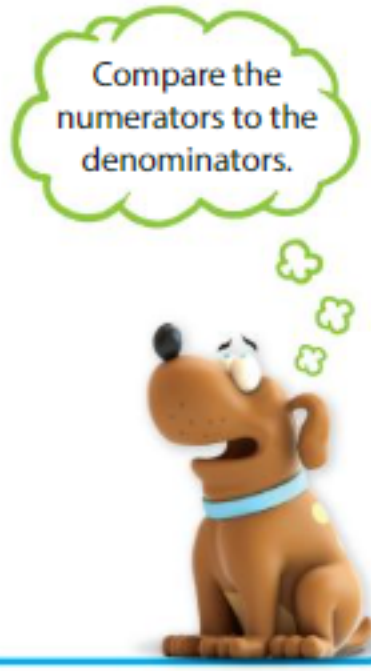
An estimate of $\frac{1}{6} + \frac{5}{8}$ is _____ + _____ = _____.

Example Estimate $\frac{9}{10} - \frac{2}{5}$.

Step 1: Use mental math to estimate each fraction.

$\frac{9}{10}$ is about _____. Think: The numerator is about the same as the denominator.

$\frac{2}{5}$ is about _____. Think: The numerator is about half of the denominator.



Step 2: Estimate the difference.

An estimate of $\frac{9}{10} - \frac{2}{5}$ is _____ − _____ = _____.

Show and Grow

Estimate the sum or difference.

1. $\frac{1}{3} + \frac{11}{12}$

2. $\frac{3}{5} + \frac{5}{6}$

3. $\frac{15}{16} - \frac{7}{8}$

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Name _____

Apply and Grow: Practice

Estimate the sum or difference.

4. $\frac{1}{6} + \frac{3}{5}$

5. $\frac{4}{5} - \frac{5}{12}$

6. $\frac{13}{16} + \frac{5}{6}$

7. $\frac{3}{6} - \frac{1}{8}$

8. $\frac{1}{14} + \frac{98}{100}$

9. $\frac{11}{12} - \frac{1}{8}$

10. You walk $\frac{1}{10}$ mile to your friend's house and then you both walk $\frac{2}{5}$ mile. Estimate how much farther you walk with your friend than you walk alone.



11. A carpenter has two wooden boards. One board is $\frac{3}{4}$ foot long and the other board is $\frac{1}{6}$ foot long. To determine whether the total length of the boards is 1 foot, should the carpenter use an estimate, or is an exact answer required? Explain.

12. MP **Number Sense** A fraction has a numerator of 1 and a denominator greater than 4. Is the fraction closer to 0, $\frac{1}{2}$, or 1? Explain.

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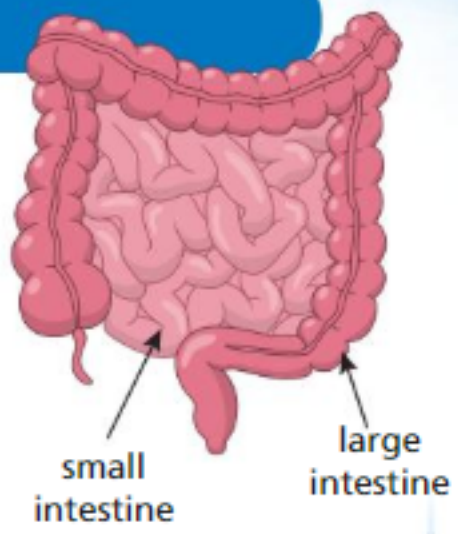
Think and Grow: Modeling Real Life



Example In the human body, the small intestine is about $20\frac{1}{12}$ feet long. The large intestine is about $4\frac{5}{6}$ feet long. About how long are the intestines in the human body?

To find the total length of the intestines, estimate $20\frac{1}{12} + 4\frac{5}{6}$.

Step 1: Use mental math to round each mixed number to the nearest whole number.

$20\frac{1}{12}$ is about _____. Think: $\frac{1}{12}$ is closer to 0 than it is to 1.

$4\frac{5}{6}$ is about _____. Think: $\frac{5}{6}$ is closer to 1 than it is to 0.

When the fractional part of a mixed number is close to 0 or 1, you can round the mixed number to the nearest whole number.



Step 2: Estimate the sum.

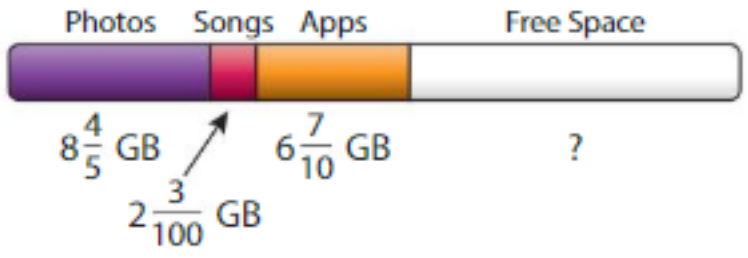
An estimate of $20\frac{1}{12} + 4\frac{5}{6}$ is _____ + _____ = _____.

So, the intestines in the human body are about _____ feet long.

Show and Grow

13. A bullfrog jumps $5\frac{11}{12}$ feet. A leopard frog jumps $4\frac{1}{3}$ feet. About how much farther does the bullfrog jump than the leopard frog?

14. **DIG DEEPER!** A cell phone has 32 gigabytes of storage. The amounts of storage used by photos, songs, and apps are shown. About how many gigabytes of storage are left?



15. **DIG DEEPER!** Use two different methods to estimate how many cups of nut medley the recipe makes. Which estimate do you think is closer to the actual answer? Explain.

Nut Medley

- $1\frac{3}{8}$ cups almonds
- $\frac{5}{8}$ cup cashews
- $2\frac{1}{3}$ cups peanuts

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Name _____

Homework & Practice 8.2

Learning Target: Estimate sums and differences of fractions.

Example Estimate $\frac{5}{12} + \frac{8}{10}$.

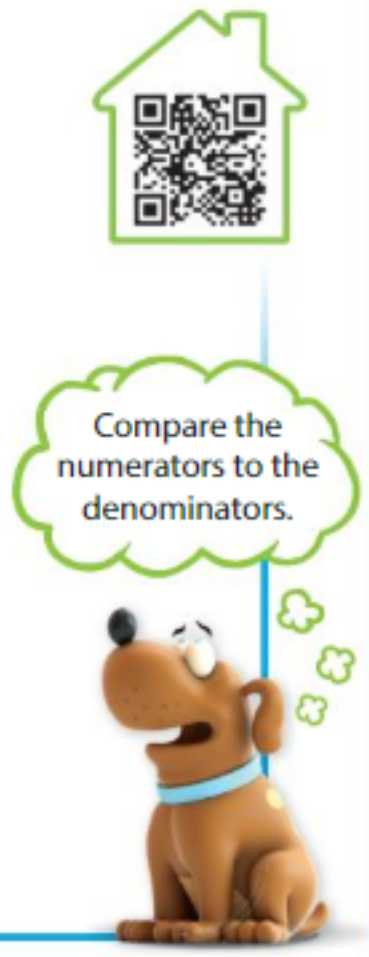
Step 1: Use mental math to estimate each fraction.

$\frac{5}{12}$ is about $\frac{1}{2}$. Think: The numerator is about half of the denominator.

$\frac{8}{10}$ is about 1. Think: The numerator is about the same as the denominator.

Step 2: Estimate the sum.

An estimate of $\frac{5}{12} + \frac{8}{10}$ is $\frac{1}{2} + 1 = 1\frac{1}{2}$.



Estimate the sum or difference.

1. $\frac{11}{12} - \frac{5}{6}$

2. $\frac{17}{20} + \frac{13}{10}$

3. $\frac{3}{8} - \frac{1}{6}$

4. $\frac{7}{12} + \frac{2}{5}$

5. $\frac{4}{5} - \frac{7}{12}$

6. $\frac{1}{5} + 1\frac{10}{21}$

7. $3\frac{5}{8} - \frac{1}{10}$

8. $6\frac{1}{3} + 2\frac{4}{6}$

9. $5\frac{7}{8} - 4\frac{49}{100}$

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10. You make a bag of trail mix with $\frac{2}{3}$ cup of raisins and $\frac{9}{8}$ cups of peanuts. About how much trail mix do you make?

11. You have $\frac{2}{3}$ cup of flour in a bin and $\frac{7}{8}$ cup of flour in a bag. To determine whether you have enough flour for a recipe that needs $1\frac{3}{4}$ cups of flour, should you use an estimate, or is an exact answer required? Explain.

12. **Writing** Explain how you know $\frac{9}{10} - \frac{3}{5}$ is about $\frac{1}{2}$.

13. **Precision** Your friend says $\frac{5}{8} + \frac{7}{12}$ is about 2. Find a closer estimate. Explain why your estimate is closer.

14. **Modeling Real Life** About how much taller is Robot A than Robot B?



Robot A:
$1\frac{6}{10}$ meters tall



Robot B:
$1\frac{1}{5}$ meters tall

15. **Modeling Real Life** A class makes a paper chain that is $5\frac{7}{12}$ feet long. The class adds another $3\frac{5}{6}$ feet to the chain. About how long is the chain now?



Review & Refresh

Find the product. Check whether your answer is reasonable.

16. $509 \times 5 =$ _____

17. $7{,}692 \times 6 =$ _____

18. $31{,}435 \times 7 =$ _____

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Name _____

Find Common Denominators 8.3

Learning Target: Write fractions using a common denominator.

Success Criteria:

- I can list multiples of numbers.
- I can find a common denominator for two fractions.
- I can write fractions using a common denominator.

FLORIDA STANDARDS
MAFS.5.NF.1.1

Explore and Grow

You cut a rectangular pan of vegetable lasagna into equal-sized pieces. You serve $\frac{1}{2}$ of the lasagna to a large table and $\frac{1}{3}$ of the lasagna to a small table. Draw a diagram that shows how you cut the lasagna.

What fraction of the lasagna does each piece represent? How does the denominator of the fraction compare to the denominators of $\frac{1}{2}$ and $\frac{1}{3}$?

MP **Reasoning** Is there another way you can cut the lasagna? Explain your reasoning.

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Think and Grow: Find Common Denominators

Key Idea Fractions that have the same denominator are said to have a **common denominator**. You can find a common denominator either by finding a common multiple of the denominators or by finding the product of the denominators.

Example Use a common denominator to write equivalent fractions for $\frac{1}{2}$ and $\frac{5}{8}$.

List multiples of the denominators.

Multiples of 2: 2, 4, 6, (8), 10, 12, 14, (16), . . .

Multiples of 8: (8), (16), 24, 32, 40, . . .

- Because 8 is a multiple of 2, 8 is a common multiple of 2 and 8.
- The product of the denominators is always a common multiple!

Use a common denominator of 8. Write a fraction equivalent to $\frac{1}{2}$ with a denominator of 8.

$\frac{1}{2} = \frac{1 \times \square}{2 \times \square} = \frac{\square}{8}$

One way to write the fractions with a common denominator is ____ and $\frac{5}{8}$.



Example Use a common denominator to write equivalent fractions for $\frac{2}{3}$ and $\frac{1}{4}$.

Use the product of the denominators: $3 \times 4 =$ ____.

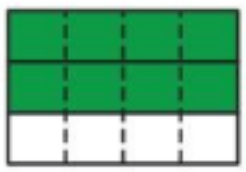
Write equivalent fractions with denominators of 12.

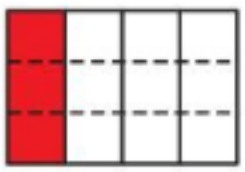
Divide each third into fourths.

$\frac{2}{3} = \frac{2 \times \square}{3 \times \square} = \frac{\square}{12}$

$\frac{1}{4} = \frac{1 \times \square}{4 \times \square} = \frac{\square}{12}$

Divide each fourth into thirds.









One way to write the fractions with a common denominator is ____ and ____.

Show and Grow

Use a common denominator to write an equivalent fraction for each fraction.

1. $\frac{2}{3}$ and $\frac{1}{6}$

2. $\frac{5}{6}$ and $\frac{3}{4}$

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Name _____

Apply and Grow: Practice

Use a common denominator to write an equivalent fraction for each fraction.

3. $\frac{2}{3}$ and $\frac{5}{6}$

4. $\frac{3}{4}$ and $\frac{1}{2}$

5. $\frac{5}{9}$ and $\frac{2}{3}$

6. $\frac{8}{21}$ and $\frac{3}{7}$

7. $\frac{1}{5}$ and $\frac{1}{2}$

8. $\frac{3}{4}$ and $\frac{1}{6}$

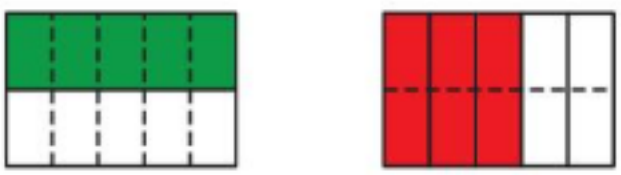
9. $\frac{3}{7}$ and $\frac{2}{9}$

10. $\frac{3}{8}$ and $\frac{5}{11}$

11. You walk your dog $\frac{3}{4}$ mile on Saturday and $\frac{5}{8}$ mile on Sunday. Use a common denominator to write an equivalent fraction for each fraction.



12. **Writing** Explain how to use the models to find a common denominator for for $\frac{1}{2}$ and $\frac{3}{5}$. Then write an equivalent fraction for each fraction.



13. **Number Sense** Which pairs of fractions are equivalent to $\frac{1}{2}$ and $\frac{2}{3}$?

$\frac{2}{4}$ and $\frac{3}{4}$

$\frac{6}{12}$ and $\frac{8}{12}$

$\frac{3}{6}$ and $\frac{4}{6}$

$\frac{1}{18}$ and $\frac{12}{18}$

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Think and Grow: Modeling Real Life



Example You and your friend make woven key chains. Your key chain is $\frac{2}{4}$ foot long. Your friend's is $\frac{3}{6}$ foot long. Are the key chains the same length?

Use a common denominator to write equivalent fractions for the lengths of the key chains. Use the product of the denominators.

$4 \times 6 =$ _____

Write equivalent fractions with denominators of 24.

$\frac{2}{4} = \frac{2 \times \square}{4 \times \square} = \frac{\square}{24}$ $\quad$ $\frac{3}{6} = \frac{3 \times \square}{6 \times \square} = \frac{\square}{24}$

Compare the lengths of the key chains.

So, the key chains _____ the same length.

Show and Grow



14. Your hamster weighs $\frac{13}{16}$ ounce. Your friend's hamster weighs $\frac{6}{8}$ ounce. Do the hamsters weigh the same amount?

15. **DIG DEEPER!** You have three vegetable pizzas of the same size. One has 4 equal slices. The second has 8 equal slices. The third has 6 equal slices. You cut the pizzas until all of them have the same number of slices. How many slices does each pizza have?

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Name _____

Homework & Practice 8.3

Learning Target: Write fractions using a common denominator.

Example Use a common denominator to write equivalent fractions for $\frac{1}{3}$ and $\frac{4}{9}$.

List multiples of the denominators.

Multiples of 3: 3, 6, (9), 12, 15, (18), 21, 24, (27), . . .

Multiples of 9: (9), (18), (27), . . .

Use a common denominator of 9. Write a fraction equivalent to $\frac{1}{3}$ with a denominator of 9.

$$\frac{1}{3} = \frac{1 \times \boxed{3}}{3 \times \boxed{3}} = \frac{\boxed{3}}{9}$$

- Because 9 is a multiple of 3, 9 is a common multiple of 3 and 9.
- The product of the denominators is always a common multiple!



One way to write the fractions with a common denominator is $\frac{3}{9}$ and $\frac{4}{9}$.

Use a common denominator to write an equivalent fraction for each fraction.

1. $\frac{1}{2}$ and $\frac{3}{8}$

2. $\frac{7}{9}$ and $\frac{2}{3}$

3. $\frac{5}{6}$ and $\frac{1}{2}$

4. $\frac{3}{4}$ and $\frac{5}{16}$

5. $\frac{18}{24}$ and $\frac{5}{6}$

6. $\frac{1}{3}$ and $\frac{1}{5}$

7. $\frac{3}{5}$ and $\frac{4}{7}$

8. $\frac{5}{8}$ and $\frac{2}{9}$

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9. A mint plant grows $\frac{7}{8}$ inch in 1 week and $\frac{13}{16}$ inch the next week. Use a common denominator to write an equivalent fraction for each fraction.

10. **Which One Doesn't Belong?** Which pair of fractions is *not* equivalent to $\frac{2}{5}$ and $\frac{1}{10}$?

$\frac{12}{30}$ and $\frac{3}{30}$

$\frac{6}{15}$ and $\frac{5}{15}$

$\frac{20}{50}$ and $\frac{10}{100}$

$\frac{8}{20}$ and $\frac{2}{20}$

11. **YOU BE THE TEACHER** Your friend says she used a common denominator to find fractions equivalent to $\frac{2}{3}$ and $\frac{8}{9}$. Is your friend correct? Explain.

$\frac{2}{3} = \frac{2 \times 4}{3 \times 4} = \frac{8}{12}$

$\frac{8}{12}$ and $\frac{8}{9}$

12. **Modeling Real Life** Some friends spend $\frac{1}{3}$ hour collecting sticks and $\frac{5}{6}$ hour building a fort. Do they spend the same amount of time on each? Explain.



13. **DIG DEEPER!** Use a common denominator to write an equivalent fraction for each fraction. Which two students are the same distance from the school? Are they closer to or farther from the school than the other student?

Student	Distance from School (mile)	Equivalent Distance (mile)
A	$\frac{10}{12}$	
B	$\frac{7}{8}$	
C	$\frac{5}{6}$	

Review & Refresh

Find the value of the expression.

14. 10^2

15. 8×10^4

16. 6×10^3

17. 9×10^5

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Name _____

Add Fractions with Unlike Denominators

8.4

Learning Target: Add fractions with unlike denominators.

Success Criteria:

- I can write fractions using a common denominator.
- I can add fractions with like denominators.
- I can add fractions with unlike denominators.

FLORIDA STANDARDS

MAFS.5.NF.1.1
MAFS.5.NF.1.2

Explore and Grow

Use a model to find the sum.

$$\frac{2}{5} + \frac{7}{10} = ?$$



Explain how you can use a model to add fifths and tenths.

MP **Construct Arguments** How can you add two fractions with unlike denominators without using a model? Explain why your method makes sense.

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Think and Grow: Add Fractions with Unlike Denominators

You can use equivalent fractions to add fractions that have unlike denominators.

Example Find $\frac{1}{4} + \frac{3}{8}$.

Use equivalent fractions to write the fractions with a common denominator. Then find the sum.

Think: 8 is a multiple of 4, so rewrite $\frac{1}{4}$ with a denominator of 8.

$$\frac{1}{4} + \frac{3}{8} = \frac{\square}{8} + \frac{3}{8}$$

$$= \frac{\square + \square}{8}$$

$$= \frac{\square}{\square}$$

Rewrite $\frac{1}{4}$ as $\frac{1 \times 2}{4 \times 2} = \frac{2}{8}$.



$\frac{1}{4}$ $\frac{3}{8}$ $\frac{5}{8}$

Example Find $\frac{7}{8} + \frac{1}{6}$. Estimate _____

Use equivalent fractions to write the fractions with a common denominator. Then find the sum.

Think: 8 is not a multiple of 6, so rewrite each fraction with a denominator of $8 \times 6 = 48$.

$$\frac{7}{8} + \frac{1}{6} = \frac{\square}{48} + \frac{\square}{48}$$

$$= \frac{\square + \square}{48}$$

$$= \frac{\square}{48}, \text{ or } \frac{\square}{\square}$$

Rewrite $\frac{7}{8}$ as $\frac{7 \times 6}{8 \times 6} = \frac{42}{48}$ and $\frac{1}{6}$ as $\frac{1 \times 8}{6 \times 8} = \frac{8}{48}$.

Reasonable? _____ is close to _____. ✓



Show and Grow

Add.

1. $\frac{5}{6} + \frac{2}{3} =$ _____

2. $\frac{1}{5} + \frac{3}{4} =$ _____

3. $\frac{1}{6} + \frac{1}{4} =$ _____

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Name _____

Apply and Grow: Practice

Add.

4. $\frac{5}{8} + \frac{1}{4} =$ _____

5. $\frac{2}{3} + \frac{7}{12} =$ _____

6. $\frac{2}{5} + \frac{10}{15} =$ _____

7. $\frac{1}{6} + \frac{4}{8} =$ _____

8. $\frac{11}{12} + \frac{3}{5} =$ _____

9. $\frac{2}{9} + \frac{4}{3} + \frac{5}{9} =$ _____

10. Your friend buys $\frac{1}{8}$ pound of green lentils and $\frac{3}{4}$ pound of brown lentils. What fraction of a pound of lentils does she buy?



11. MP **Reasoning** Newton and Descartes find $\frac{1}{2} + \frac{1}{6}$. Newton says the sum is $\frac{4}{6}$. Descartes says the sum is $\frac{2}{3}$. Who is correct? Explain.

12. DIG DEEPER! Write two fractions that have a sum of 1 and have different denominators.

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Think and Grow: Modeling Real Life



Example About $\frac{17}{25}$ of Earth's surface is covered by ocean water. About $\frac{3}{100}$ of Earth's surface is covered by other water sources. About how much of Earth's surface is covered by water?

Add $\frac{17}{25}$ and $\frac{3}{100}$ to find the fraction of Earth's surface that is covered by water.

Estimate _____

Think: 100 is a multiple of 25, so rewrite $\frac{17}{25}$ with a denominator of 100.

$$\frac{17}{25} + \frac{3}{100} = \frac{\square}{100} + \frac{3}{100}$$

Rewrite $\frac{17}{25}$ as $\frac{17 \times 4}{25 \times 4} = \frac{68}{100}$.

$$= \frac{\square + \square}{100}$$

$$= \frac{\square}{100}$$

Reasonable? _____ is close to _____. ✓

So, about _____ of Earth's surface is covered by water.

You can add the fractions because they each represent a part of the same whole: Earth.



Show and Grow

13. The George Washington Bridge links Manhattan, NY, to Fort Lee, NJ. The part of the bridge in New Jersey is about $\frac{1}{2}$ mile long. The part in New York is about $\frac{2}{5}$ mile long. About how long is the George Washington Bridge?



The George Washington Bridge is the busiest moter vehicle bridge in the world.

14. **DIG DEEPER!** Your goal is to practice playing the saxophone for at least 2 hours in 1 week. Do you reach your goal? Explain.

Day	Monday	Wednesday	Friday
Practice Time	$\frac{3}{4}$ hour	$\frac{1}{2}$ hour	$\frac{2}{3}$ hour

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Name _____

Homework & Practice 8.4

Learning Target: Add fractions with unlike denominators.

Example Find $\frac{2}{5} + \frac{1}{3}$.

Estimate $\frac{1}{2} + \frac{1}{2} = 1$

Use equivalent fractions to write the fractions with a common denominator. Then find the sum.

Think: 5 is not a multiple of 3, so rewrite each fraction with a denominator of $5 \times 3 = 15$.

$$\frac{2}{5} + \frac{1}{3} = \frac{\boxed{6}}{15} + \frac{\boxed{5}}{15}$$

Rewrite $\frac{2}{5}$ as $\frac{2 \times 3}{5 \times 3} = \frac{6}{15}$ and $\frac{1}{3}$ as $\frac{1 \times 5}{3 \times 5} = \frac{5}{15}$.

$$= \frac{\boxed{6} + \boxed{5}}{15}$$

$$= \frac{\boxed{11}}{15}$$

Reasonable? $\frac{11}{15}$ is close to 1. ✓

Add.

1. $\frac{1}{9} + \frac{2}{3} =$ _____

2. $\frac{1}{2} + \frac{3}{4} =$ _____

3. $\frac{4}{6} + \frac{5}{12} =$ _____

4. $\frac{1}{3} + \frac{1}{4} =$ _____

5. $\frac{3}{2} + \frac{4}{5} =$ _____

6. $\frac{6}{8} + \frac{9}{10} + \frac{1}{8} =$ _____

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7. You use beads to make a design. Of the beads, $\frac{1}{3}$ are red and $\frac{1}{6}$ are blue. The rest are white. What fraction of the beads are red or blue?

8. **YOU BE THE TEACHER** Your friend says the sum of $\frac{1}{5}$ and $\frac{9}{10}$ is $\frac{10}{15}$. Is your friend correct? Explain.

9. **Reasoning** Which expressions are equal to $\frac{14}{15}$?

$\frac{8}{8} + \frac{6}{7}$

$\frac{3}{5} + \frac{1}{3}$

$\frac{1}{5} + \frac{11}{15}$

$\frac{11}{10} + \frac{3}{5}$

10. **Modeling Real Life** There are 100 senators in the 115th Congress. Democrats make up $\frac{46}{100}$ of the senators, and Republicans make up $\frac{13}{25}$ of the senators. The rest are Independents. What fraction of the senators are Democrat or Republican?

11. **Modeling Real Life** Your friend needs 1 cup of homemade orange juice. He squeezes $\frac{1}{2}$ cup of orange juice from one orange and $\frac{3}{8}$ cup from another orange. Does your friend need to squeeze another orange? Explain.

12. **DIG DEEPER!** Of all the atoms in caffeine, $\frac{1}{12}$ are oxygen atoms, $\frac{1}{6}$ are nitrogen atoms, and $\frac{1}{3}$ are carbon atoms. The rest of the atoms are hydrogen. What fraction of the atoms in caffeine are oxygen, nitrogen, or hydrogen?

Review & Refresh

Use properties to find the sum or product.

13. 5×84

14. $521 + 0 + 67$

15. $25 \times 8 \times 4$

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Name _____

8.5 Subtract Fractions with Unlike Denominators

Learning Target: Subtract fractions with unlike denominators.

Success Criteria:

- I can write fractions using a common denominator.
- I can subtract fractions with like denominators.
- I can subtract fractions with unlike denominators.

FLORIDA STANDARDS

MAFS.5.NF.1.1
MAFS.5.NF.1.2

Explore and Grow

Use a model to find the difference.

$$\frac{7}{12} - \frac{1}{4} = ?$$



$= ?$

Explain how you can use a model to subtract fourths from twelfths.

MP **Construct Arguments** How can you subtract two fractions with unlike denominators without using a model? Explain why your method makes sense.

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Think and Grow: Subtract Fractions with Unlike Denominators

You can use equivalent fractions to subtract fractions that have unlike denominators.

Example Find $\frac{9}{10} - \frac{1}{2}$.

Use equivalent fractions to write the fractions with a common denominator. Then find the difference.

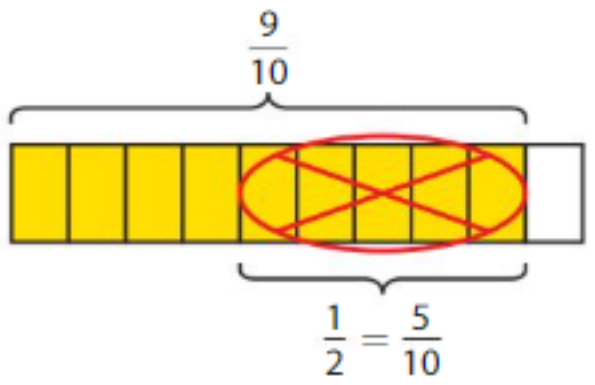
Think: 10 is a multiple of 2, so rewrite $\frac{1}{2}$ with a denominator of 10.

$$\frac{9}{10} - \frac{1}{2} = \frac{9}{10} - \frac{\square}{10}$$

$$= \frac{\square - \square}{10}$$

$$= \frac{\square}{\square}, \text{ or } \frac{\square}{\square}$$

Rewrite $\frac{1}{2}$ as $\frac{1 \times 5}{2 \times 5} = \frac{5}{10}$.



Example Find $\frac{4}{3} - \frac{1}{4}$. Estimate _____

Use equivalent fractions to write the fractions with a common denominator. Then find the difference.

Think: 4 is not a multiple of 3, so rewrite each fraction with a denominator of $3 \times 4 = 12$.

$$\frac{4}{3} - \frac{1}{4} = \frac{\square}{12} - \frac{\square}{12}$$

$$= \frac{\square - \square}{12}$$

$$= \frac{\square}{12}$$

Rewrite $\frac{4}{3}$ as $\frac{4 \times 4}{3 \times 4} = \frac{16}{12}$ and $\frac{1}{4}$ as $\frac{1 \times 3}{4 \times 3} = \frac{3}{12}$.

Reasonable? _____ is close to _____. ✓

Show and Grow

Subtract.

1. $\frac{1}{2} - \frac{1}{4} =$ _____

2. $\frac{7}{9} - \frac{2}{3} =$ _____

3. $\frac{6}{5} - \frac{3}{8} =$ _____

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Name _____

Apply and Grow: Practice

Subtract.

4. $\frac{10}{12} - \frac{3}{4} =$ _____

5. $\frac{1}{3} - \frac{1}{6} =$ _____

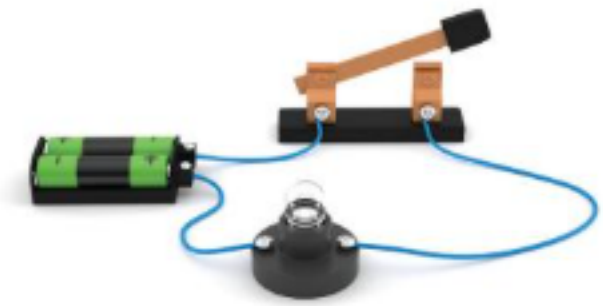
6. $\frac{9}{10} - \frac{2}{5} =$ _____

7. $\frac{5}{4} - \frac{2}{5} =$ _____

8. $\frac{13}{16} - \frac{3}{16} - \frac{5}{8} =$ _____

9. $\frac{8}{9} - \left(\frac{2}{3} + \frac{1}{6}\right) =$ _____

10. You have $\frac{3}{4}$ yard of wire. You use $\frac{1}{3}$ yard to make an electric circuit. How much wire do you have left?



11. MP **Precision** Your friend finds $\frac{5}{8} - \frac{2}{5}$. Explain why his answer is unreasonable. What did he do wrong?

$$\frac{5}{8} - \frac{2}{5} = \frac{3}{3} = 1$$

12. **Number Sense** Which two fractions have a difference of $\frac{1}{8}$?

$\frac{1}{2}$ $\frac{2}{10}$ $\frac{1}{6}$ $\frac{3}{8}$

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Think and Grow: Modeling Real Life


Quartz Sand


Volcanic Sand

Example A geologist needs $\frac{1}{2}$ cup of volcanic sand to perform an experiment. She has $\frac{3}{2}$ cups of quartz sand. She has $\frac{2}{3}$ cup more quartz sand than volcanic sand. Can she perform the experiment?

Find how many cups of volcanic sand the geologist has by subtracting $\frac{2}{3}$ from $\frac{3}{2}$.

Use equivalent fractions to write the fractions with a common denominator. Then find the difference.

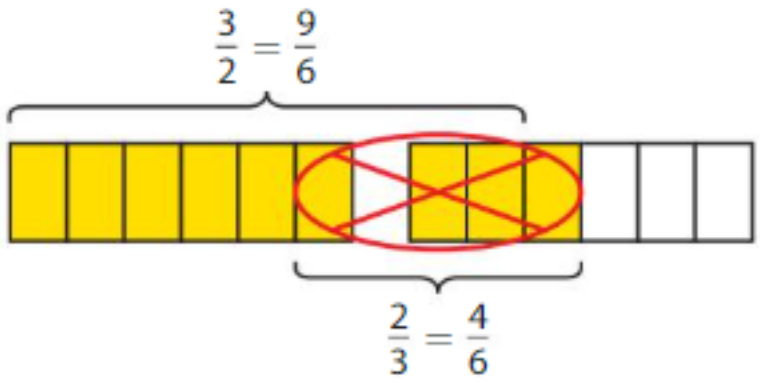
Think: 3 is not a multiple of 2, so rewrite each fraction with a denominator of $2 \times 3 = 6$.

$$\frac{3}{2} - \frac{2}{3} = \frac{\square}{6} - \frac{\square}{6}$$

$$= \frac{\square - \square}{6}$$

$$= \frac{\square}{6}$$

Rewrite $\frac{3}{2}$ as $\frac{3 \times 3}{2 \times 3} = \frac{9}{6}$ and $\frac{2}{3}$ as $\frac{2 \times 2}{3 \times 2} = \frac{4}{6}$.



Compare the difference to $\frac{1}{2}$.

$$\frac{\square}{6} \overset{?}{>} \frac{1}{2}$$

So, the geologist _____ have enough volcanic sand to perform the experiment.

Show and Grow

13. The world record for the longest dog tail is $\frac{77}{100}$ meter. The previous record was $\frac{1}{20}$ meter shorter than the current record. Was the previous record longer than $\frac{3}{4}$ meter?



14. **DIG DEEPER!** A woodworker has 1 gallon of paint for a tree house. He uses $\frac{3}{8}$ gallon to paint the walls and $\frac{1}{5}$ gallon to paint the ladder. He needs $\frac{1}{4}$ gallon to paint the roof. Does he have enough paint? Explain.

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Name _____

Homework & Practice 8.5

Learning Target: Subtract fractions with unlike denominators.

Example Find $\frac{5}{8} - \frac{1}{6}$.

Estimate $\frac{1}{2} - 0 = \frac{1}{2}$

Use equivalent fractions to write the fractions with a common denominator. Then find the difference.

Think: 8 is not a multiple of 6, so rewrite each fraction with a denominator of $6 \times 8 = 48$.

$$\frac{5}{8} - \frac{1}{6} = \frac{\boxed{30}}{48} - \frac{\boxed{8}}{48}$$

$$= \frac{\boxed{30} - \boxed{8}}{48}$$

$$= \frac{\boxed{22}}{48}, \text{ or } \frac{\boxed{11}}{\boxed{24}}$$

Rewrite $\frac{5}{8}$ as $\frac{5 \times 6}{8 \times 6} = \frac{30}{48}$ and $\frac{1}{6}$ as $\frac{1 \times 8}{6 \times 8} = \frac{8}{48}$.

Reasonable? $\frac{11}{24}$ is close to $\frac{1}{2}$. ✓

Subtract.

1. $\frac{3}{4} - \frac{1}{8} =$ _____

2. $\frac{4}{5} - \frac{6}{15} =$ _____

3. $\frac{1}{2} - \frac{1}{8} =$ _____

4. $\frac{5}{3} - \frac{3}{4} =$ _____

5. $\frac{6}{8} - \frac{7}{10} =$ _____

6. $\frac{5}{6} - \frac{1}{4} - \frac{3}{12} =$ _____

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7. You eat $\frac{1}{12}$ of a vegetable casserole. Your friend eats $\frac{1}{6}$ of the same casserole. How much more does your friend eat than you?

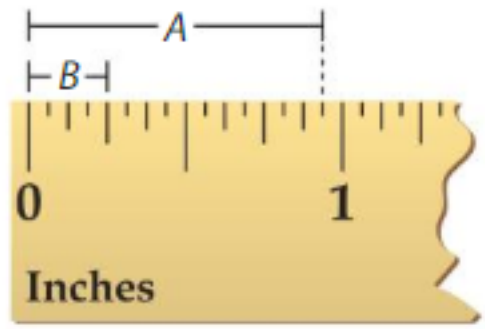


8. Writing Why do fractions need a common denominator before you can add or subtract them?

9. MP Logic Find a.

$$\frac{7}{10} - a = \frac{1}{2}$$

10. DIG DEEPER! Write and solve an equation to find the difference between Length A and Length B on the ruler.



11. Modeling Real Life You want to stack cups in $\frac{1}{4}$ minute. Your first attempt takes $\frac{1}{2}$ minute. Your second attempt takes $\frac{3}{10}$ minute less than your first attempt. Do you meet your goal?

12. Modeling Real Life You and your friend each have a canvas of the same size. You divide your canvas into 5 sections and paint 3 of them. Your friend divides her canvas into 7 sections and paints 4 of them. Who paints more? How much more?

Review & Refresh

Evaluate. Check whether your answer is reasonable.

13. $1.7 + 5 + 4.3 =$ _____

14. $15.24 + 6.13 - 7 =$ _____

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Name _____

Add Mixed Numbers 8.6

Learning Target: Add mixed numbers with unlike denominators.

Success Criteria:

- I can add fractional parts and whole number parts of mixed numbers with unlike denominators.
- I can use equivalent fractions to add mixed numbers with unlike denominators.

FLORIDA STANDARDS

MAFS.5.NF.1.1
MAFS.5.NF.1.2

Explore and Grow

Use a model to find the sum.

$$1\frac{3}{4} + 2\frac{1}{8}$$

MP **Construct Arguments** How can you add mixed numbers with unlike denominators without using a model? Explain why your method makes sense.

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Think and Grow: Add Mixed Numbers

Key Idea A **proper fraction** is a fraction less than 1. An **improper fraction** is a fraction greater than 1. A mixed number represents the sum of a whole number and a proper fraction. You can use equivalent fractions to add mixed numbers.

Example Find $1\frac{1}{2} + 2\frac{5}{6}$.

One Way: Add the fractional parts and add the whole number parts.

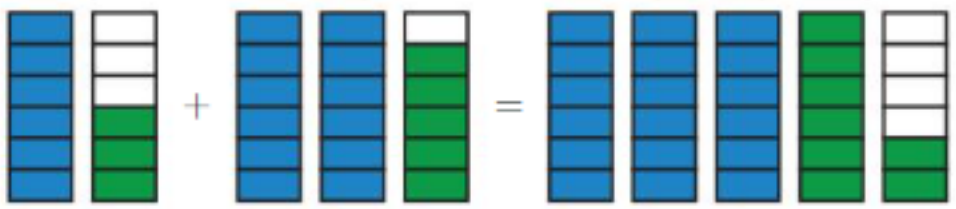
To add the fractional parts, use a common denominator.

$$\begin{array}{r} 1\frac{1}{2} \\ +\ 2\frac{5}{6} \\ \hline \end{array} \longrightarrow \begin{array}{r} 1\frac{\square}{6} \\ +\ 2\frac{5}{6} \\ \hline 3\frac{8}{6}, \text{ or } \square\frac{\square}{\square} \end{array}$$

$3\frac{8}{6} = 3 + 1\frac{2}{6}$



$1\frac{3}{6}$ $\quad$ $2\frac{5}{6}$ $\quad$ $3\frac{8}{6} = 4\frac{2}{6} = 4\frac{1}{3}$



$\frac{9}{6}$ $\quad$ $\frac{17}{6}$ $\quad$ $\frac{26}{6} = 4\frac{2}{6} = 4\frac{1}{3}$

Another Way: Write the mixed numbers as improper fractions with a common denominator, then add.

$$1\frac{1}{2} = 1 + \frac{1}{2} = \frac{2}{2} + \frac{1}{2} = \frac{3}{2} = \frac{\square}{6}$$

$$2\frac{5}{6} = 2 + \frac{5}{6} = \frac{12}{6} + \frac{5}{6} = \frac{17}{6}$$

$$\frac{9}{6} + \frac{17}{6} = \frac{\square}{\square}, \text{ or } \square\frac{\square}{\square}$$

$\frac{26}{6} = \frac{24}{6} + \frac{2}{6}$

So, $1\frac{1}{2} + 2\frac{5}{6} = \square\frac{\square}{\square}$.



Show and Grow

Add.

1. $2\frac{2}{3} + 2\frac{1}{6} =$ _____

2. $1\frac{5}{12} + 3\frac{3}{4} =$ _____

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Name _____

Apply and Grow: Practice

Add.

3. $5\frac{4}{9} + 1\frac{2}{3} =$ _____

4. $3\frac{1}{2} + \frac{5}{12} =$ _____

5. $4\frac{5}{6} + 3\frac{5}{12} =$ _____

6. $\frac{4}{5} + 8\frac{7}{20} =$ _____

7. $2\frac{1}{3} + \frac{1}{6} + 3\frac{2}{3} =$ _____

8. $5\frac{1}{2} + 4\frac{3}{4} + 6\frac{5}{8} =$ _____

9. Your science class makes magic milk using $1\frac{1}{8}$ cups of watercolor paint and $1\frac{3}{4}$ cups of milk. How many cups of magic milk does your class make?



10. MP **Structure** Find $2\frac{3}{10} + 4\frac{2}{5}$ two different ways.

11. DIG DEEPER! Find the missing numbers.

$$2\frac{3}{4} + \square\frac{\square}{8} = 4\frac{3}{8}$$

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Think and Grow: Modeling Real Life



Example You kayak $1\frac{8}{10}$ miles and then take a break. You kayak $1\frac{1}{4}$ more miles. How many miles do you kayak altogether?

Add the distances you kayak before and after you take a break.

Estimate _____

$$\begin{array}{r} 1\frac{8}{10} \\ +\ 1\frac{1}{4} \\ \hline \end{array} \longrightarrow \begin{array}{r} 1\frac{\square}{\square} \\ +\ 1\frac{\square}{\square} \\ \hline 2\frac{\square}{\square}, \text{ or } \square\frac{\square}{\square} \end{array}$$

Reasonable? _____ is close to _____. ✓

You kayak _____ miles altogether.

Show and Grow

12. You listen to a song that is $2\frac{3}{4}$ minutes long. Then you listen to a song that is $3\frac{1}{3}$ minutes long. How many minutes do you spend listening to the two songs altogether?



13. **DIG DEEPER!** A beekeeper collects $3\frac{3}{4}$ more pounds of honey from Hive 3 than Hive 1. Which hive produces the most honey? Explain.

Hive	Honey Collected (pounds)
1	$23\frac{5}{8}$
2	$27\frac{1}{2}$
3	?



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Name _____

Homework & Practice 8.6

Learning Target: Add mixed numbers with unlike denominators.

Example Find $1\frac{3}{4} + 4\frac{5}{8}$.

One Way: Add the fractional parts and add the whole number parts.

To add the fractional parts, use a common denominator.

$$\begin{array}{r} 1\frac{3}{4} \\ +\ 4\frac{5}{8} \\ \hline \end{array} \longrightarrow \begin{array}{r} 1\frac{\boxed{6}}{8} \\ +\ 4\frac{5}{8} \\ \hline 5\frac{11}{8} \end{array}, \text{ or } \boxed{6}\frac{\boxed{3}}{\boxed{8}}$$

Another Way: Write the mixed numbers as improper fractions with a common denominator, then add.

$$1\frac{3}{4} = 1 + \frac{3}{4} = \frac{4}{4} + \frac{3}{4} = \frac{7}{4} = \frac{\boxed{14}}{8}$$

$$4\frac{5}{8} = 4 + \frac{5}{8} = \frac{32}{8} + \frac{5}{8} = \frac{37}{8}$$

$$\frac{14}{8} + \frac{37}{8} = \frac{\boxed{51}}{\boxed{8}}, \text{ or } \boxed{6}\frac{\boxed{3}}{\boxed{8}}$$

So, $1\frac{3}{4} + 4\frac{5}{8} = \boxed{6}\frac{\boxed{3}}{\boxed{8}}$.

Add.

1. $6\frac{2}{5} + 1\frac{3}{10} =$ _____

2. $2\frac{2}{3} + 5\frac{3}{6} =$ _____

3. $\frac{1}{4} + 3\frac{2}{5} =$ _____

4. $9\frac{5}{7} + \frac{2}{3} =$ _____

5. $2\frac{1}{2} + 1\frac{3}{4} + \frac{1}{2} =$ _____

6. $2\frac{2}{3} + 4\frac{1}{2} + 3\frac{5}{6} =$ _____

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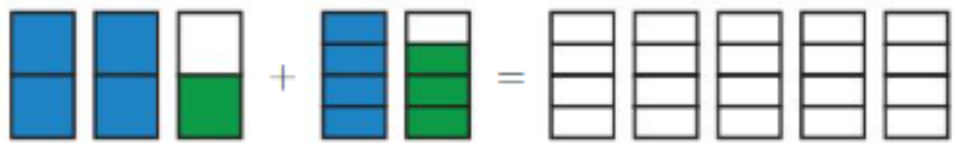
7. A veterinarian spends $3\frac{3}{4}$ hours helping cats and $5\frac{1}{2}$ hours helping dogs. How many hours does she spend helping cats and dogs altogether?



8. **Writing** How is adding mixed numbers with unlike denominators similar to adding fractions with unlike denominators? How is it different?

9. MP **Logic** Can you add two mixed numbers and get a sum of 2? Explain.

10. MP **Structure** Shade the model to represent the sum. Then write an equation to represent your model.



11. **Modeling Real Life** An emperor tamarin has a body length of $9\frac{5}{10}$ inches and a tail length of $14\frac{1}{4}$ inches. How long is the emperor tamarin?



12. DIG DEEPER! A long jumper jumps $1\frac{2}{3}$ feet farther on her third attempt than her second attempt. On which attempt does she jump the farthest? Explain.

Attempt	First	Second	Third
Distance (feet)	$15\frac{5}{6}$	$13\frac{3}{4}$	?

Review & Refresh

Find the product. Check whether your answer is reasonable.

13. 354×781

14. $4{,}029 \times 276$

15. 950×326

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Name _____

Subtract Mixed Numbers 8.7

Learning Target: Subtract mixed numbers with unlike denominators.

Success Criteria:

- I can subtract fractional parts and whole number parts of mixed numbers with unlike denominators.
- I can use equivalent fractions to subtract mixed numbers with unlike denominators.

FLORIDA STANDARDS

MAFS.5.NF.1.1
MAFS.5.NF.1.2

Explore and Grow

Use a model to find the difference.

$$3\frac{5}{6} - 2\frac{1}{3}$$

MP **Construct Arguments** How can you subtract mixed numbers with unlike denominators without using a model? Explain why your method makes sense.

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Think and Grow: Subtract Mixed Numbers

You can use equivalent fractions to subtract mixed numbers that have fractional parts with unlike denominators.

Example Find $3\frac{1}{4} - 1\frac{1}{2}$.

One Way: Subtract the fractional parts and subtract the whole number parts.

To subtract the fractional parts, use a common denominator.

$$\begin{array}{r} 3\frac{1}{4} \\ -\ 1\frac{1}{2} \\ \hline \end{array} \rightarrow \begin{array}{r} 2\frac{\square}{4} \\ -\ 1\frac{2}{4} \\ \hline \square\frac{\square}{\square} \end{array}$$

← There are not enough fourths to subtract $\frac{2}{4}$ from $\frac{1}{4}$.

So, rename $3\frac{1}{4}$.

$$3 + \frac{1}{4} = 2 + \frac{4}{4} + \frac{1}{4}$$

$$= 2\frac{5}{4}$$

Another Way: Write the mixed numbers as improper fractions with a common denominator, then subtract.

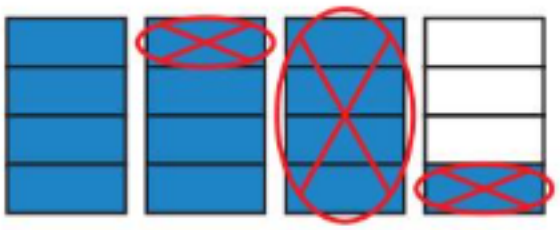
$$3\frac{1}{4} = 3 + \frac{1}{4} = \frac{12}{4} + \frac{1}{4} = \frac{13}{4}$$

$$1\frac{1}{2} = 1 + \frac{1}{2} = \frac{2}{2} + \frac{1}{2} = \frac{3}{2} = \frac{\square}{4}$$

$$\frac{13}{4} - \frac{6}{4} = \frac{\square}{\square}, \text{ or } \square\frac{\square}{\square}$$

So, $3\frac{1}{4} - 1\frac{1}{2} = \square\frac{\square}{\square}$.

$$3\frac{1}{4} - 1\frac{1}{2} = 1\frac{3}{4}$$



$$\frac{13}{4} - \frac{6}{4} = \frac{7}{4}$$

Show and Grow

Subtract.

1. $1\frac{4}{5} - 1\frac{3}{10} =$ _____

2. $5\frac{7}{12} - 3\frac{5}{6} =$ _____

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Name _____

Apply and Grow: Practice

Subtract.

3. $8\frac{11}{12} - 5\frac{2}{3} =$ _____

4. $6 - 4\frac{3}{4} =$ _____

5. $21\frac{2}{9} - 10\frac{1}{3} =$ _____

6. $7\frac{1}{2} - \frac{5}{8} =$ _____

7. $9\frac{7}{20} - 1\frac{3}{5} =$ _____

8. $7\frac{5}{6} - 1\frac{1}{6} - 2\frac{2}{3} =$ _____

9. A volunteer at a food bank buys $3\frac{3}{4}$ pounds of cheese to make sandwiches. She uses $2\frac{7}{8}$ pounds. How much cheese does she have left?



10. **Writing** How is adding mixed numbers the same as subtracting mixed numbers? How is it different?

11. MP **Number Sense** Write the words as an expression. Then evaluate.

Subtract the sum of four and three-fourths and two and five-eighths from eleven and seven-eighths.

12. DIG DEEPER! Find the missing number.

$$3\frac{1}{4} - 1\frac{\square}{12} = 2\frac{1}{6}$$

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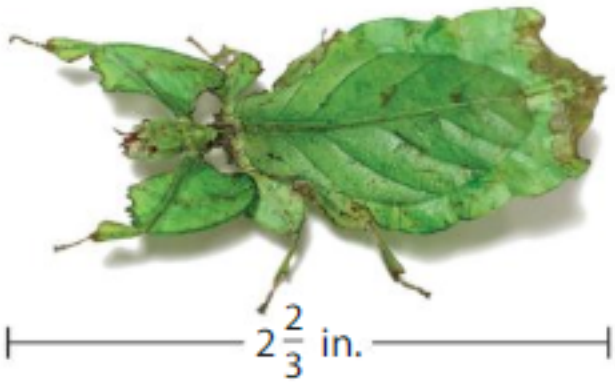
Think and Grow: Modeling Real Life

Example A dragonfly is $1\frac{1}{2}$ inches long. How much longer is the walking leaf than the dragonfly?

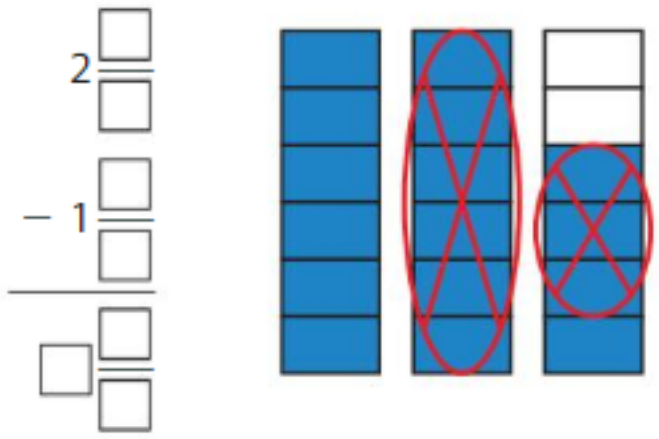
Walking Leaf



$2\frac{2}{3}$ in.

To find how much longer the walking leaf is than the dragonfly, subtract the length of the dragonfly from the length of the walking leaf.

$$2\frac{2}{3} - 1\frac{1}{2}$$



The walking leaf is _____ inches longer than the dragonfly.

Show and Grow

13. You volunteer $5\frac{3}{4}$ hours in 1 month. You spend $3\frac{1}{3}$ hours volunteering at an animal shelter. You spend the remaining hours picking up litter on the side of the road. How many hours do you spend picking up litter?

14. A professional basketball player is $6\frac{3}{4}$ feet tall. Your friend is $4\frac{5}{6}$ feet tall. How much taller is the basketball player than your friend?

15. **DIG DEEPER!** Your rain gauge has $2\frac{1}{2}$ inches of water. After a rainstorm, your rain gauge has $1\frac{3}{4}$ more inches of water. It is sunny for a week. Now your rain gauge has $2\frac{2}{3}$ inches of water. How many inches of water evaporated?

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Name _____

Homework & Practice 8.7

Learning Target: Subtract mixed numbers with unlike denominators.

Example Find $5\frac{3}{10} - 2\frac{4}{5}$.

One Way: Subtract the fractional parts and subtract the whole number parts.

To subtract the fractional parts, use a common denominator.

$5\frac{3}{10} \rightarrow 4\frac{\boxed{13}}{10}$ ← There are not enough tenths to subtract $\frac{8}{10}$ from $\frac{3}{10}$. So, rename $5\frac{3}{10}$.

$-\ 2\frac{4}{5} \quad -\ 2\frac{8}{10}$

$\boxed{2}\frac{\boxed{5}}{\boxed{10}}$,

or $\boxed{2}\frac{\boxed{1}}{\boxed{2}}$

$= 4 + \frac{10}{10} + \frac{3}{10}$

$= 4\frac{13}{10}$

So, $5\frac{3}{10} - 2\frac{4}{5} = \boxed{2}\frac{\boxed{1}}{\boxed{2}}$.

Another Way: Write the mixed numbers as improper fractions with a common denominator, then subtract.

$5\frac{3}{10} = 5 + \frac{3}{10} = \frac{50}{10} + \frac{3}{10} = \frac{53}{10}$

$2\frac{4}{5} = 2 + \frac{4}{5} = \frac{10}{5} + \frac{4}{5} = \frac{14}{5} = \frac{\boxed{28}}{10}$

$\frac{53}{10} - \frac{28}{10} = \frac{\boxed{25}}{\boxed{10}}$, or $\boxed{2}\frac{\boxed{1}}{\boxed{2}}$

Subtract.

1. $9\frac{5}{6} - 4\frac{1}{2} =$ _____

2. $3\frac{2}{3} - \frac{1}{9} =$ _____

3. $6\frac{1}{3} - 1\frac{11}{12} =$ _____

4. $12\frac{5}{6} - 7\frac{3}{10} =$ _____

5. $5 - 2\frac{3}{4} =$ _____

6. $4\frac{1}{5} - 2\frac{1}{4} =$ _____

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Subtract.

7. $7\frac{5}{8} - 1\frac{5}{6} =$ _____

8. $8\frac{1}{9} - 6\frac{7}{8} =$ _____

9. $1\frac{6}{7} + 5\frac{13}{14} - 2\frac{1}{2} =$ _____

10. **YOU BE THE TEACHER** Your friend says the difference of 8 and $3\frac{7}{10}$ is $5\frac{7}{10}$. Is your friend correct? Explain.

11. **DIG DEEPER!** Use a symbol card to complete the equation. Then find b.

$$4\frac{1}{4} - 1\frac{17}{20} \square b = 1\frac{1}{2}$$

$+$ $-$

12. **Modeling Real Life** The world record for the heaviest train pulled with a human beard is $2\frac{3}{4}$ metric tons. The world record for the heaviest train pulled by human teeth is $4\frac{1}{5}$ metric tons. How much heavier is the train pulled by teeth than the train pulled with a beard?

13. **Modeling Real Life** Your friend's hair is $50\frac{4}{5}$ centimeters long. Your hair is $8\frac{9}{10}$ centimeters long. How much longer is your friend's hair than yours?



Review & Refresh

14. Round 6.294.

Nearest whole number: _____

Nearest tenth: _____

Nearest hundredth: _____

15. Round 10.571.

Nearest whole number: _____

Nearest tenth: _____

Nearest hundredth: _____

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Name _____

Problem Solving: Fractions 8.8

Learning Target: Solve multi-step word problems involving fractions and mixed numbers.

Success Criteria:

- I can understand a problem.
- I can make a plan to solve.
- I can solve a problem using an equation.

FLORIDA STANDARDS

MAFS.5.NF.1.1
MAFS.5.NF.1.2

Explore and Grow

Make a plan to solve the problem.



At a state park, every $\frac{1}{10}$ mile of a walking trail is marked. Every $\frac{1}{4}$ mile of a separate biking trail is marked. The table shows the number of mileage markers you and your friend pass while walking and biking on the trails. Who travels farther? How much farther?

	Markers Passed	
	Walking Trail	**Biking Trail**
You	8	9
Your Friend	12	6

MP **Make Sense of Problems** You decide to walk farther and you pass 4 more mileage markers on the walking trail. Does this change your plan to solve the problem? Explain.

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Think and Grow: Problem Solving: Fractions



Example To repair a skate ramp, you cut a piece of wood from a $9\frac{1}{2}$-foot-long board. Then you cut the remaining piece in half. Each half is $3\frac{5}{12}$ feet long. How long is the first piece you cut?

Understand the Problem

What do you know?

- The board is $9\frac{1}{2}$ feet long.
- You cut a piece from the board.
- You cut the rest into two pieces that are each $3\frac{5}{12}$ feet long.

What do you need to find?

- You need to find the length of the first piece you cut.

Make a Plan

How will you solve?

Write and solve an equation: Subtract the sum of the lengths of the last two pieces you cut from the total length of the board.

Solve

Length of the first piece you cut	=	Total length of the board	−	(	Length of one-half of remaining piece	+	Length of one-half of remaining piece	)

Let g represent the length of the first piece you cut.

$$g = 9\frac{1}{2} - \left(3\frac{5}{12} + 3\frac{5}{12}\right)$$

$$= 9\frac{1}{2} - \square\frac{\square}{\square}$$

$$= \square\frac{\square}{\square}$$

So, the length of the first piece you cut is _____ feet.

Show and Grow

1. Explain how you can check your answer in the example above.

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Name _____

Apply and Grow: Practice

Understand the problem. What do you know? What do you need to find? Explain.

2. A racehorse eats $38\frac{1}{2}$ pounds of food each day. He eats $22\frac{3}{4}$ pounds of hay and $7\frac{1}{2}$ pounds of grains. How many pounds of his daily diet is *not* hay or grains?



3. In 2015, American Pharoah won all of the horse races shown in the table. How many kilometers did American Pharoah run in the races altogether?

Race	Length (kilometers)
Kentucky Derby	2
Preakness Stakes	$1\frac{9}{10}$
Belmont Stakes	$2\frac{2}{5}$

Understand the problem. Then make a plan. How will you solve? Explain.

4. You have $2\frac{1}{2}$ cups of blueberries. You use $1\frac{1}{4}$ cups for pancakes and $\frac{1}{3}$ cup for muffins. What fraction of a cup of blueberries do you have left?

5. A customer orders 2 pounds of cheese at a deli. The deli worker places some cheese in a bowl and weighs it. The scale shows $1\frac{1}{4}$ pounds. The bowl weighs $\frac{1}{8}$ pound. What fraction of a pound of cheese does the worker need to add to the bowl?

6. MP **Reasoning** Student A is $8\frac{1}{2}$ inches shorter than Student B. Student B is $3\frac{1}{4}$ inches taller than Student C. Student C is $56\frac{3}{8}$ inches tall. How tall is Student A? Student B?

7. DIG DEEPER! A police dog spends $\frac{1}{8}$ of his workday in a police car, $\frac{3}{4}$ of his workday in public, and the rest of his workday at the police station. What fraction of the dog's day is spent at the police station?

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Think and Grow: Modeling Real Life



Magellan was an unmanned spacecraft whose primary mission was to gather images of the surface of Venus.

Example The *Magellan* spacecraft, launched by the United States, spent $5\frac{5}{12}$ years in space before it burned in Venus's atmosphere. Its first 4 cycles around Venus each lasted $\frac{2}{3}$ year. The remaining cycles around Venus lasted a total of $1\frac{1}{2}$ years. How long did it take *Magellan* to travel from Earth to Venus?

Think: What do you know? What do you need to find? How will you solve?

Length of time from Earth to Venus	+	Number of cycles	×	Length of one cycle around Venus	+	Length of remaining cycles	=	Total time spent in space

Let m represent the length of time from Earth to Venus.

$$m + 4 \times \frac{2}{3} + 1\frac{1}{2} = 5\frac{5}{12}$$

$$m + \square\frac{\square}{\square} + 1\frac{1}{2} = 5\frac{5}{12}$$

$$m + \square\frac{\square}{\square} = 5\frac{5}{12}$$

$$m = 5\frac{5}{12} - \square\frac{\square}{\square}$$ Write the related subtraction equation.

$$m = \square\frac{\square}{\square}, \text{ or } \square\frac{\square}{\square}$$

So, it took *Magellan* $\square\frac{\square}{\square}$ years to travel from Earth to Venus.

Show and Grow

8. You have one of each euro coin shown. Your friend has four euro coins that have a total weight of $21\frac{3}{10}$ grams. Whose coins weigh more? How much more?

Euro Coin				
Weight (g)	$2\frac{3}{10}$	$5\frac{3}{4}$	$7\frac{4}{5}$	$7\frac{1}{2}$

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Name _____

Homework & Practice 8.8

Learning Target: Solve multi-step word problems involving fractions and mixed numbers.

Example Newton makes a model canoe. He cuts a board into three pieces. Two of the pieces are each $1\frac{1}{3}$ feet long for the oars, and one of the pieces is $2\frac{3}{4}$ feet long for the canoe. How long was the board Newton started with?

Think: What do you know? What do you need to find? How will you solve?

Length of board he started with	=	Length of one oar piece	+	Length of one oar piece	+	Length of canoe piece

Let g represent the length of the board he started with.

$$g = 1\frac{1}{3} + 1\frac{1}{3} + 2\frac{3}{4}$$

$$= 1\frac{4}{12} + 1\frac{4}{12} + 2\frac{9}{12}$$

$$= 4\frac{17}{12}, \text{ or } 5\frac{5}{12}$$

So, the length of the board he started with was $5\frac{5}{12}$ feet.

Understand the problem. What do you know? What do you need to find? Explain.

1. Your goal is to exercise for 15 hours this month. You exercise for $3\frac{1}{2}$ hours the first week and $3\frac{3}{4}$ hours the next week. How many more hours do you need to exercise to reach your goal?

2. A taxi driver travels $4\frac{5}{8}$ miles to his first stop. He travels $1\frac{3}{4}$ miles less to his second stop. How many miles does the taxi driver travel for the two stops?



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Understand the problem. Then make a plan. How will you solve? Explain.

3. During the U.S. Civil War, $\frac{5}{9}$ of the states fought for the Union, and $\frac{11}{36}$ of the states fought for the Confederacy. The rest of the states were border states. What fraction of the states were border states?

4. You have $6\frac{3}{4}$ pounds of clay. You use $4\frac{1}{6}$ pounds to make a medium-sized bowl and $1\frac{1}{2}$ pounds to make a small bowl. How many pounds of clay do you have left?



5. **DIG DEEPER!** Newton and Descartes have a 70-day summer vacation. They go to camp for $\frac{23}{70}$ of their vacation, and they travel for $\frac{6}{35}$ of their vacation. They stay home the rest of their vacation. How many weeks do Newton and Descartes spend at home?

6. **Modeling Real Life** A farmer plants beets in a square garden with side lengths of $12\frac{2}{3}$ feet. He plants squash in a garden with a perimeter of $50\frac{1}{2}$ feet. Which garden has a greater perimeter? How much greater is it?

7. **DIG DEEPER!** Which grade uses more leafy greens daily for its classroom rabbits? How much more does it use?

4th Grade	5th Grade
4 rabbits	2 rabbits
Leafy greens each rabbit eats:	Leafy greens each rabbit eats:
A.M. $\frac{3}{4}$ cup	A.M. $1\frac{1}{4}$ cups
P.M. 1 cup	P.M. $1\frac{1}{3}$ cups

Review & Refresh

Find the product.

8. $0.43 \times 1{,}000 =$ _____

9. $25.8 \times 0.1 =$ _____

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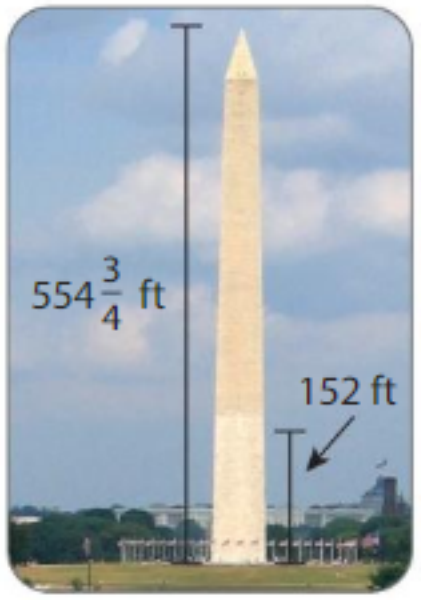
Name _____

Performance Task 8

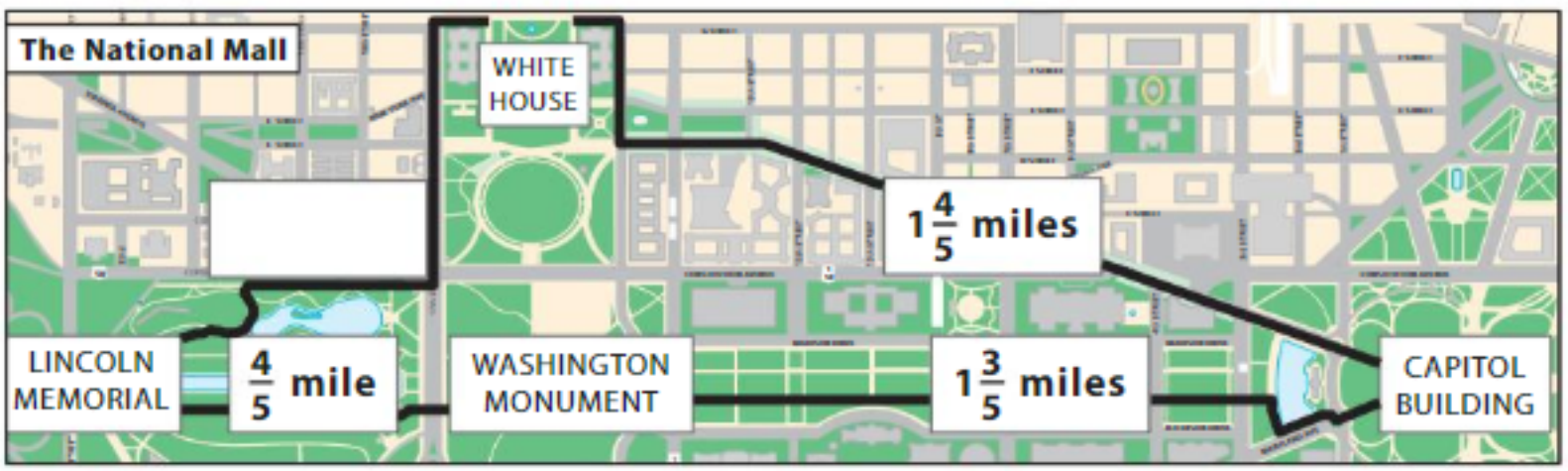
Many historic landmarks are located in Washington, D.C.

1. Initial construction of the Washington Monument began in 1848. When the height of the monument reached 152 feet, construction halted due to lack of funds. How many feet were added to the height of the monument when construction resumed 23 years later?



The Washington Monument is made out of marble and has an aluminum pyramid at the top.

2. You visit several historic landmarks. You start at the Capitol Building and walk to the Washington Monument, then the Lincoln Memorial, then the White House, and then back to the Capitol Building.



a. You walk 3 miles each hour. It takes you $\frac{1}{2}$ hour to walk from the Lincoln Memorial to the White House. What is the distance from the Lincoln Memorial to the White House? Label the map.

b. What is the total distance you walk visiting the landmarks?

3. A law in Washington, D.C., restricts a new building's height to no more than 20 feet taller than the width of the street it faces. You design a building with stories that are each 15 feet tall for a street that is $88\frac{2}{3}$ feet wide. What is the greatest number of stories your building can have? How much shorter is your building than the height restriction?

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Mixed Number Subtract and Add

Directions:

1. Each player flips four Mixed Number Cards.
2. Each player arranges the cards to create two differences that will have the greatest possible sum.
3. Each player records the two differences, and then adds the differences.
4. Players repeat Steps 1–3.
5. Each player adds Sum A and Sum B to find the total. The player with the greatest total wins!

Greater Number	–	Lesser Number	=	Score
☐ ☐/☐	–	☐ ☐/☐	=	☐ ☐/☐
☐ ☐/☐	–	☐ ☐/☐	=	+ ☐ ☐/☐
			Sum A	☐ ☐/☐
☐ ☐/☐	–	☐ ☐/☐	=	☐ ☐/☐
☐ ☐/☐	–	☐ ☐/☐	=	+ ☐ ☐/☐
			Sum B	☐ ☐/☐

Sum A	+	Sum B	=	Total
☐ ☐/☐	+	☐ ☐/☐	=	☐ ☐/☐

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Name _____

Chapter Practice 8

8.1 Simplest Form

Write the fraction in simplest form.

1. $\frac{2}{12}$

2. $\frac{15}{30}$

3. $\frac{16}{24}$

4. $\frac{18}{36}$

5. $\frac{8}{32}$

6. $\frac{25}{10}$

8.2 Estimate Sums and Differences of Fractions

Estimate the sum or difference.

7. $\frac{7}{8} - \frac{1}{5}$

8. $\frac{5}{6} + \frac{9}{10}$

9. $\frac{11}{12} - \frac{89}{100}$

10. MP **Precision** Your friend says $\frac{7}{8} - \frac{5}{12}$ is about 0. Find a closer estimate. Explain why your estimate is closer.

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8.3 Find Common Denominators

Use a common denominator to write an equivalent fraction for each fraction.

11. $\frac{1}{4}$ and $\frac{1}{2}$

12. $\frac{2}{3}$ and $\frac{2}{9}$

13. $\frac{2}{3}$ and $\frac{5}{6}$

14. $\frac{4}{5}$ and $\frac{1}{3}$

15. $\frac{5}{6}$ and $\frac{8}{9}$

16. $\frac{4}{5}$ and $\frac{3}{4}$

8.4 Add Fractions with Unlike Denominators

Add.

17. $\frac{2}{15} + \frac{2}{3} =$ _____

18. $\frac{3}{4} + \frac{1}{8} =$ _____

19. $\frac{7}{2} + \frac{1}{6} =$ _____

20. $\frac{5}{9} + \frac{1}{2} =$ _____

21. $\frac{7}{10} + \frac{5}{6} =$ _____

22. $\frac{1}{6} + \frac{11}{12} + \frac{4}{6} =$ _____

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8.5 Subtract Fractions with Unlike Denominators

Subtract.

23. $\frac{1}{4} - \frac{1}{8} =$ _____

24. $\frac{3}{2} - \frac{7}{10} =$ _____

25. $\frac{15}{16} - \frac{7}{8} =$ _____

26. $\frac{4}{3} - \frac{2}{5} =$ _____

27. $\frac{5}{6} - \frac{3}{4} =$ _____

28. $\frac{7}{10} - \frac{2}{5} + \frac{11}{20} =$ _____

8.6 Add Mixed Numbers

Add.

29. $1\frac{3}{4} + 7\frac{5}{8} =$ _____

30. $3\frac{3}{10} + 2\frac{7}{20} =$ _____

31. $\frac{1}{3} + 6\frac{4}{5} =$ _____

32. $5\frac{8}{9} + \frac{5}{6} =$ _____

33. $2\frac{2}{3} + \frac{4}{9} + 4\frac{1}{3} =$ _____

34. $5\frac{1}{2} + 2\frac{5}{8} + 3\frac{3}{4} =$ _____

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8.7 Subtract Mixed Numbers

Subtract.

35. $8\frac{7}{10} - 1\frac{2}{5} =$ _____

36. $15\frac{97}{100} - 10\frac{7}{20} =$ _____

37. $4 - 3\frac{5}{6} =$ _____

38. $5\frac{1}{3} - 2\frac{1}{2} =$ _____

39. $9\frac{2}{5} - 6\frac{3}{4} =$ _____

40. $2\frac{3}{8} + 7\frac{1}{2} - 1\frac{11}{16} =$ _____

41. **Modeling Real Life** A family adopts a puppy that weighs $7\frac{7}{8}$ pounds. They take him to the vet 2 weeks later, and he weighs $12\frac{3}{16}$ pounds. How much weight did the puppy gain?

8.8 Problem Solving: Fractions

42. A radio station plays three commercials between two songs. The commercials play for 2 minutes altogether. The first commercial is $\frac{1}{2}$ minute, and the second commercial is $1\frac{1}{4}$ minutes. How long is the third commercial?

43. Your friend plants a tree seedling on Earth Day that is $1\frac{1}{3}$ feet tall. In 1 year, the tree grows $1\frac{5}{6}$ feet. After 2 years, the tree is $4\frac{11}{12}$ feet tall. How much did the tree grow in the second year?



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9 Multiply Fractions

- The elevation of a location on Earth is its height above sea level. What do you think this means?
- The highest point at the Grand Canyon is about $1\frac{2}{3}$ miles above sea level. How can you find its elevation in feet?

Chapter Learning Target:
Understand multiplying fractions.

Chapter Success Criteria:
- I can identify a fraction as a sum of unit fractions.
- I can write a fraction as a sum of unit fractions.
- I can multiply fractions.
- I can solve a problem using fractions.

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Name _____

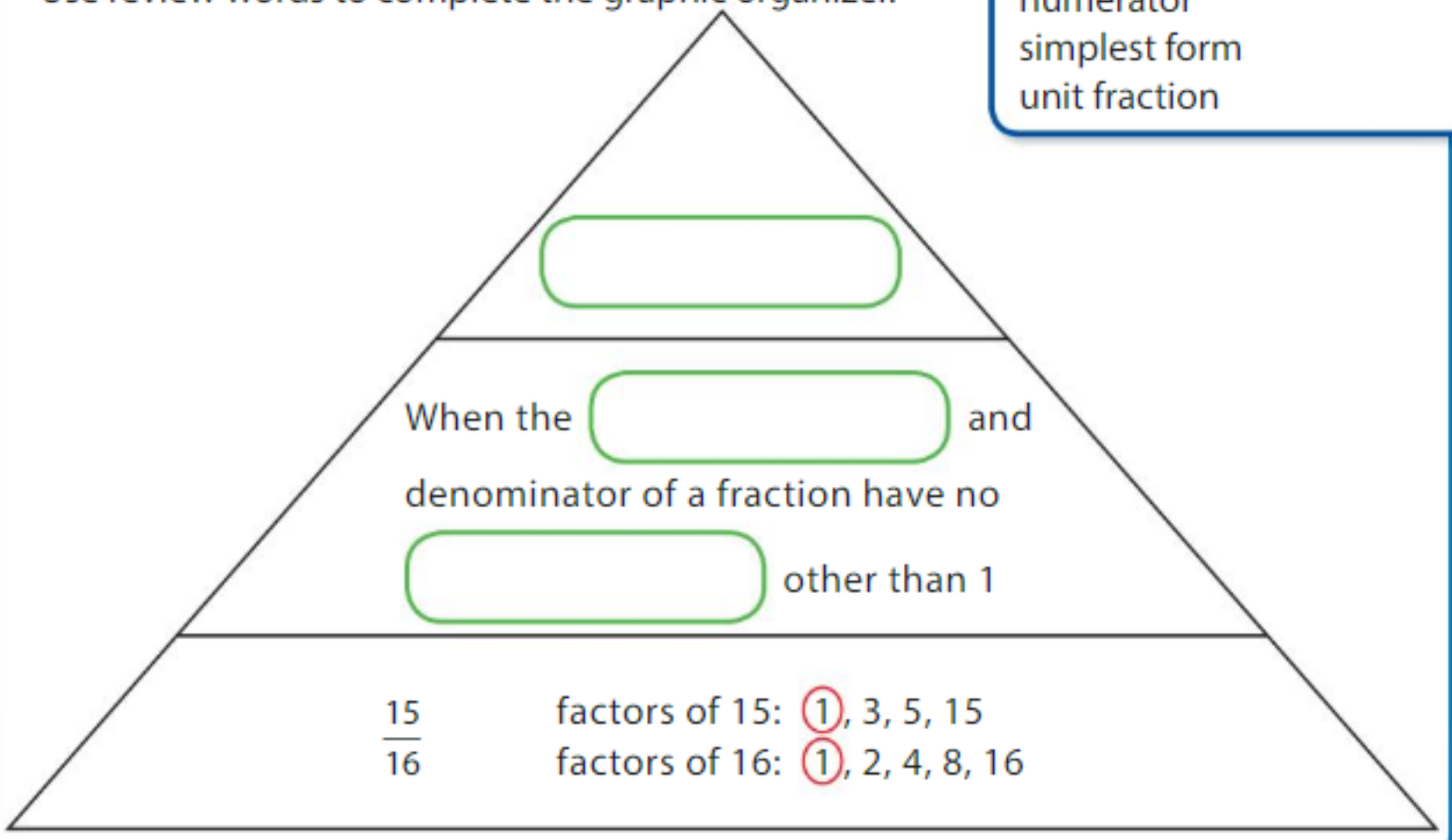
9 Vocabulary

Review Words

common factors
decimal fraction
improper fraction
numerator
simplest form
unit fraction

Organize It

Use review words to complete the graphic organizer.



Define It

Match each review word to a fraction.

1. decimal fraction

2. improper fraction

3. unit fraction

$\frac{1}{8}$

$\frac{17}{100}$

$\frac{13}{5}$

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Name _____

9.1 Multiply Whole Numbers by Fractions

Learning Target: Multiply whole numbers by fractions.

Success Criteria:

- I can use a model to multiply a whole number by a fraction.
- I can write a multiplication expression as a repeated addition expression.
- I can write a multiple of a fraction as a multiple of a unit fraction.

FLORIDA STANDARDS

MAFS.5.NF.2.4a
MAFS.5.NF.2.6

Explore and Grow

Write any proper fraction that is *not* a unit fraction. Draw a model to represent your fraction.

Draw a model to find a multiple of your fraction.

MP **Reasoning** How can you use a model to multiply a whole number by a fraction? Explain.

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Think and Grow: Multiply Whole Numbers by Fractions

Example Find $3 \times \frac{2}{5}$.

One Way: Use repeated addition.

$$3 \times \frac{2}{5} = \frac{2}{5} + \frac{2}{5} + \frac{2}{5}$$

$$= \frac{\square + \square + \square}{5}$$

$$= \frac{\square}{\square}$$

Another Way: Rewrite the expression as a multiple of a unit fraction.

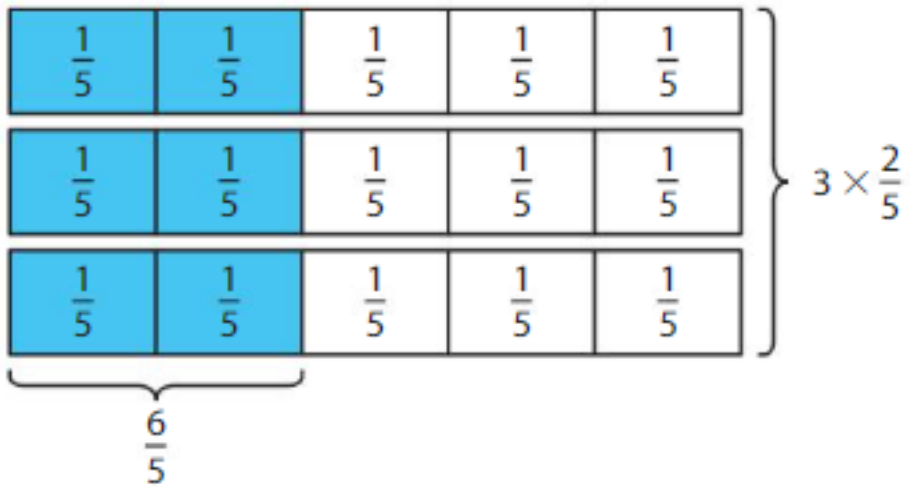
$$3 \times \frac{2}{5} = 3 \times \left(\_\_\_\_ \times \frac{1}{5}\right)$$

$$= (3 \times \_\_\_\_) \times \frac{1}{5}$$ Associative Property of Multiplication

$$= \_\_\_\_ \times \frac{1}{5}$$

$$= \frac{\square}{\square}$$

So, $3 \times \frac{2}{5} = \_\_\_\_$.



Show and Grow

Multiply.

1. $2 \times \frac{3}{4} = \_\_\_\_$

2. $4 \times \frac{5}{8} = \_\_\_\_$

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Name _____

Apply and Grow: Practice

Multiply.

3. $5 \times \frac{7}{10} = \_\_\_\_$

4. $8 \times \frac{2}{3} = \_\_\_\_$

5. $7 \times \frac{5}{6} = \_\_\_\_$

6. $9 \times \frac{1}{2} = \_\_\_\_$

7. $6 \times \frac{3}{100} = \_\_\_\_$

8. $15 \times \frac{4}{7} = \_\_\_\_$

9. $10 \times \frac{5}{3} = \_\_\_\_$

10. $4 \times \frac{5}{2} = \_\_\_\_$

11. $3 \times \frac{11}{8} = \_\_\_\_$

Find the unknown number.

12. $\square \times \frac{3}{20} = \frac{9}{20}$

13. $\square \times \frac{4}{9} = \frac{24}{9}$

14. $\square \times \frac{5}{12} = \frac{50}{12}$

15. A recipe calls for $\frac{3}{4}$ cup of dried rice noodles. You make 4 batches of the recipe. How many cups of dried rice noodles do you use?



Thai Rice Noodle Salad

16. **YOU BE THE TEACHER** Your friend says that $5 \times \frac{3}{5}$ is equal to $\frac{3}{5} + \frac{3}{5} + \frac{3}{5} + \frac{3}{5} + \frac{3}{5}$. Is your friend correct? Explain.

17. **MP Patterns** Describe and complete the pattern.

Expression	Product
$9 \times \frac{1}{4}$	$\frac{9}{4}$
$9 \times \frac{2}{4}$	
$9 \times \frac{3}{4}$	
$9 \times \frac{4}{4}$	

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Think and Grow: Modeling Real Life



Example Your goal is to make a waterslide that is at least 10 meters long. You make the waterslide using 10 plastic mats that are each $\frac{3}{2}$ meters long. Do you reach your goal?

Find the length of the waterslide by multiplying the number of mats by the length of each mat.

$10 \times \frac{3}{2} = 10 \times \left(\_\_\_\_ \times \frac{1}{2}\right)$

$= (10 \times \_\_\_\_) \times \frac{1}{2}$ Associative Property of Multiplication

$= \_\_\_\_ \times \frac{1}{2}$

$= \_\_\_\_$

You _____ reach your goal.

Show and Grow

18. An excavator is moving 4 piles of dirt that are the same size. Each pile requires $\frac{3}{4}$ hour to move. Can the excavator move all of the piles in 2 hours?

19. You walk dogs $\frac{5}{4}$ miles two times each day. How far do you walk the dogs in 1 week?



20. DIG DEEPER! You have 10 feet of string. You need $\frac{5}{3}$ feet of string to make 1 necklace. You make 5 necklaces. Do you have enough string to make another necklace? Explain.

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Name _____

Homework & Practice 9.1

Learning Target: Multiply whole numbers by fractions.

Example Find $2 \times \frac{5}{6}$.

One Way: Use repeated addition.

$2 \times \frac{5}{6} = \frac{5}{6} + \frac{5}{6}$

$= \frac{\boxed{5} + \boxed{5}}{6}$

$= \frac{\boxed{10}}{\boxed{6}}$, or $\frac{\boxed{5}}{\boxed{3}}$

Another Way: Rewrite the expression as a multiple of a unit fraction.

$2 \times \frac{5}{6} = 2 \times \left(\underline{5} \times \frac{1}{6}\right)$

$= (2 \times \underline{5}) \times \frac{1}{6}$ Associative Property of Multiplication

$= \underline{10} \times \frac{1}{6} = \frac{\boxed{10}}{\boxed{6}}$, or $\frac{\boxed{5}}{\boxed{3}}$

So, $2 \times \frac{5}{6} = \underline{\frac{5}{3}}$.





Multiply.

1. $5 \times \frac{2}{3} =$ _____

2. $9 \times \frac{7}{8} =$ _____

3. $4 \times \frac{11}{12} =$ _____

4. $8 \times \frac{35}{100} =$ _____

5. $3 \times \frac{1}{2} =$ _____

6. $7 \times \frac{2}{5} =$ _____

7. $6 \times \frac{7}{4} =$ _____

8. $12 \times \frac{8}{7} =$ _____

9. $25 \times \frac{10}{9} =$ _____

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Find the unknown number.

10. $\square \times \frac{5}{7} = \frac{25}{7}$

11. $\square \times \frac{9}{10} = \frac{63}{10}$

12. $\square \times \frac{3}{5} = \frac{27}{5}$

13. You make 5 servings of pancakes. You top each serving with $\frac{1}{4}$ cup of strawberries. How many cups of strawberries do you use?

14. **Which One Doesn't Belong?** Which one does *not* belong with the other three?

$4 \times \frac{3}{8}$ $\quad$ $3 \times \frac{1}{8}$

$\frac{3}{8} + \frac{3}{8} + \frac{3}{8} + \frac{3}{8}$ $\quad$ $1 + \frac{1}{2}$



15. **Modeling Real Life** You complete $\frac{5}{2}$ inches of a weaving each day for 5 days. The weaving needs to be at least 11 inches long. Is your weaving complete?

16. **DIG DEEPER!** You spend $\frac{7}{2}$ hours playing drums each day for 2 days. Your friend spends $\frac{5}{4}$ hours playing drums each day for 6 days. Who spends more time playing drums? How much more?



Review & Refresh

Find the product.

17.
$$\begin{array}{r} 0.6 \\ \times\ 0.4 \\ \hline \end{array}$$

18.
$$\begin{array}{r} 2.37 \\ \times\ 1.9 \\ \hline \end{array}$$

19.
$$\begin{array}{r} 52.8 \\ \times\ 0.75 \\ \hline \end{array}$$

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Name _____

9.2 Use Models to Multiply Fractions by Whole Numbers

Learning Target: Multiply fractions by whole numbers.

Success Criteria:

- I can divide a whole into equal parts.
- I can use a model to find part of a group.
- I can use a model to multiply a fraction by a whole number.

FLORIDA STANDARDS

MAFS.5.NF.2.4a
MAFS.5.NF.2.6

Explore and Grow

You need to give water to $\frac{2}{3}$ of the dogs at a shelter. There are 12 dogs at the shelter. How many dogs need water? Draw a model to support your answer.

MP **Reasoning** How can you use a model to multiply a fraction by a whole number? Explain.

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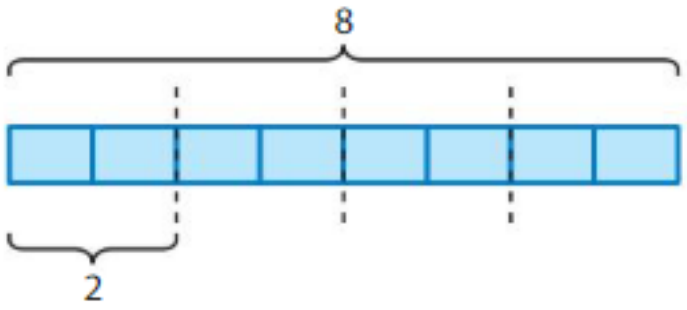
Think and Grow: Multiply Fractions by Whole Numbers

You can use models to multiply a fraction by a whole number.

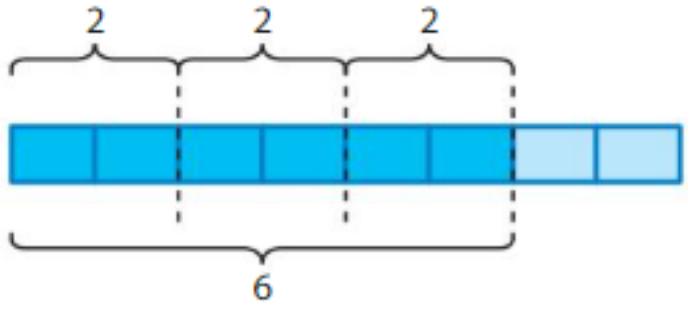
Example Find $\frac{3}{4}$ of 8.

Step 1: Because you are finding $\frac{3}{4}$ of 8, divide 8 into 4 equal parts.



Each of the four equal parts is 2.

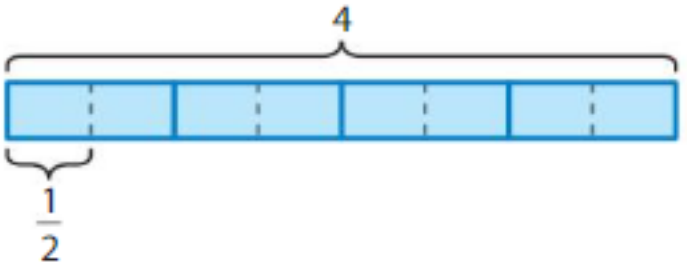
Step 2: Because you are finding $\frac{3}{4}$ of 8, take 3 of the parts.



So, $\frac{3}{4}$ of $8 = \frac{3}{4} \times 8 =$ _____.

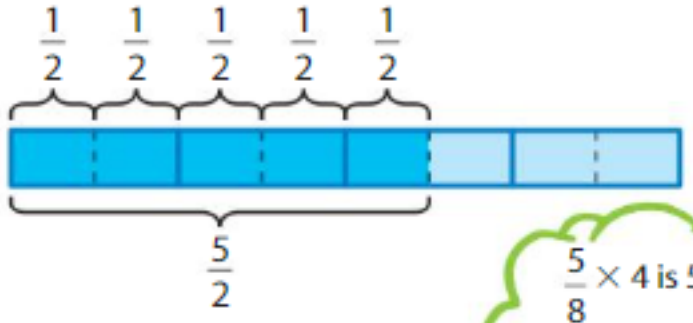
Example Find $\frac{5}{8} \times 4$.

Step 1: Because you are finding $\frac{5}{8}$ of 4, divide 4 into 8 equal parts.



Each of the eight equal parts is $\frac{1}{2}$.

Step 2: Because you are finding $\frac{5}{8}$ of 4, take 5 of the parts.



So, $\frac{5}{8} \times 4 =$ _____.



Show and Grow

1. Find $\frac{2}{5}$ of 10.

2. Find $\frac{7}{12} \times 6$.

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Name _____

Apply and Grow: Practice

Multiply. Use a model to help.

3. $\frac{5}{6}$ of 12

4. $\frac{2}{3} \times 9$

5. $\frac{1}{5} \times 10$

6. $\frac{3}{5}$ of 5

7. $\frac{1}{6}$ of 3

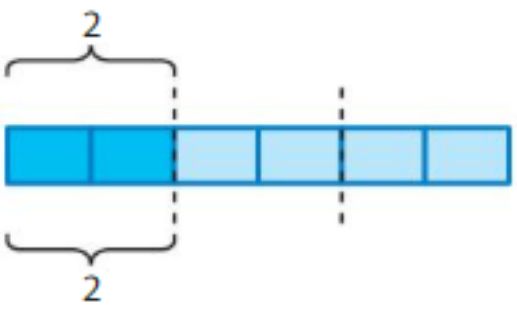
8. $\frac{3}{8} \times 4$

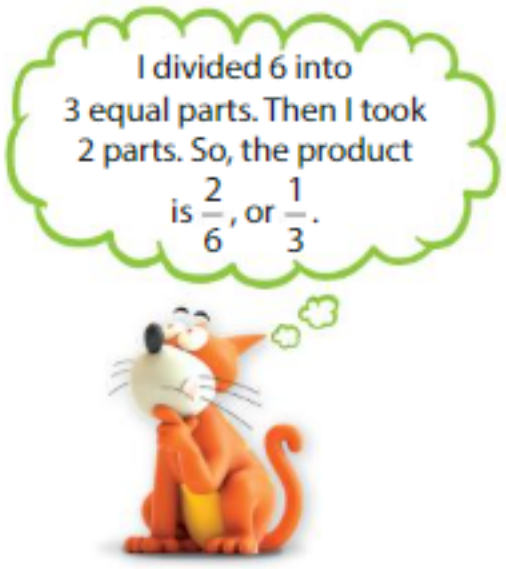
9. You have 25 beads. You use $\frac{2}{5}$ of the beads to make a bracelet. How many beads do you use?

10. **Writing** Write and solve a real-life problem for the expression.

$$\frac{3}{4} \times 20$$

11. **YOU BE THE TEACHER** Descartes finds $\frac{2}{3} \times 6$. Is he correct? Explain.





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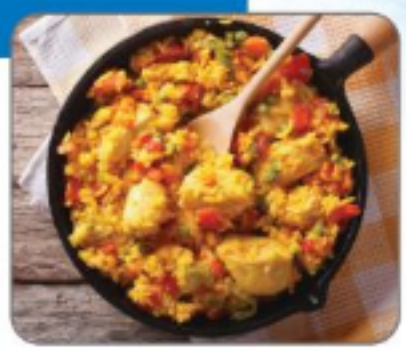
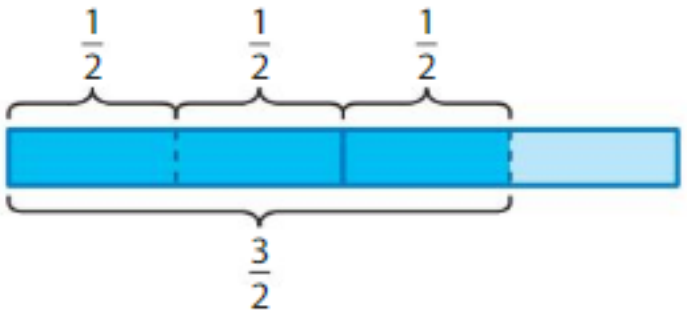
Think and Grow: Modeling Real Life



Example A recipe calls for 2 cups of rice. You only have $\frac{3}{4}$ of that amount. How much more rice do you need?

Find the number of cups of rice that you have by finding $\frac{3}{4}$ of 2.



You have _____ cups of rice.

Subtract the amount of rice you have from the amount of rice you need.

2 − _____ = _____

So, you need _____ cup more of rice.



Show and Grow

12. You have 12 tokens. You use $\frac{3}{4}$ of them to play a pinball game. How many tokens do you have left?

13. A male lion sleeps $\frac{5}{6}$ of each day. How many hours does the lion sleep in 1 week?



14. DIG DEEPER! In a class of 20 students, $\frac{1}{10}$ of the students are 10 years old, $\frac{4}{5}$ of the students are 11 years old, and the rest are 12 years old. How many more 11-year-olds than 12-year-olds are in the class?

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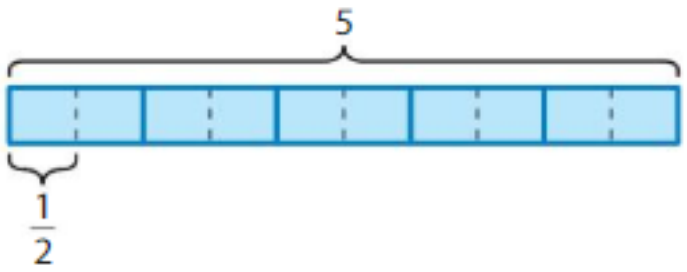
Name _____

Homework & Practice 9.2

Learning Target: Multiply fractions by whole numbers.

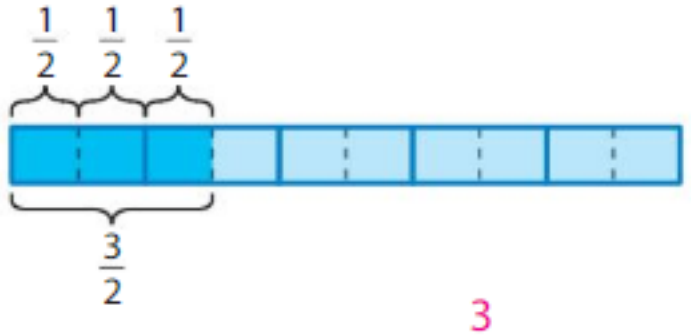
Example Find $\frac{3}{10}$ of 5.

Step 1: Because you are finding $\frac{3}{10}$ of 5, divide 5 into 10 equal parts.



Each of the ten equal parts is $\frac{1}{2}$.

Step 2: Because you are finding $\frac{3}{10}$ of 5, take 3 of the parts.



So, $\frac{3}{10}$ of $5 = \frac{3}{10} \times 5 =$ $\frac{3}{2}$.

Multiply. Use a model to help.

1. $\frac{2}{3} \times 6$

2. $\frac{3}{5}$ of 10

3. $\frac{1}{2}$ of 4

4. $\frac{1}{4} \times 12$

5. $\frac{5}{6} \times 3$

6. $\frac{3}{4}$ of 2

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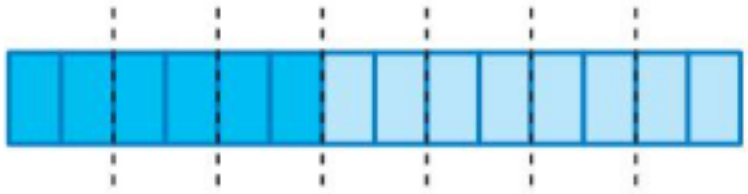
7. You have 27 foam balls. You use $\frac{1}{3}$ of the balls for a model. How many balls do you use?



8. An object that weighs 1 pound on Earth weighs about $\frac{1}{15}$ pound on Pluto. A man weighs 240 pounds on Earth. How many pounds does he weigh on Pluto?

9. MP **Structure** Write a multiplication equation represented by the model.



10. DIG DEEPER! Find each missing number.

$\frac{1}{3} \times \square = 4$

$\frac{2}{5} \times 15 = \square$

$\frac{1}{\square} \times 10 = 5$

$\frac{\square}{6} \times 18 = 15$

11. **Modeling Real Life** You have 28 craft sticks. You use $\frac{4}{7}$ of them for a project. How many craft sticks do you have left?

12. **Modeling Real Life** A mother otter spends $\frac{1}{3}$ of each day feeding her baby. How many hours does the mother otter spend feeding her baby in 1 week?



Review & Refresh

Estimate the quotient.

13. 5,692 ÷ 5

14. 309 ÷ 12

15. 2,987 ÷ 53

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Name _____

9.3 Multiply Fractions and Whole Numbers

Learning Target: Multiply fractions and whole numbers.

Success Criteria:

- I can use a rule to multiply a whole number by a fraction.
- I can use a rule to.multiply a fraction by a whole number.

FLORIDA STANDARDS

MAFS.5.NF.2.4a
MAFS.5.NF.2.6

Explore and Grow

Use models to help you complete the table. What do you notice about each expression and its product?

Expression	Product
$2 \times \frac{7}{10}$	
$5 \times \frac{2}{3}$	
$\frac{3}{4} \times 4$	
$\frac{5}{8} \times 2$	

MP **Construct Arguments** Explain how to multiply fractions and whole numbers without using models.

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Think and Grow: Multiply Fractions and Whole Numbers

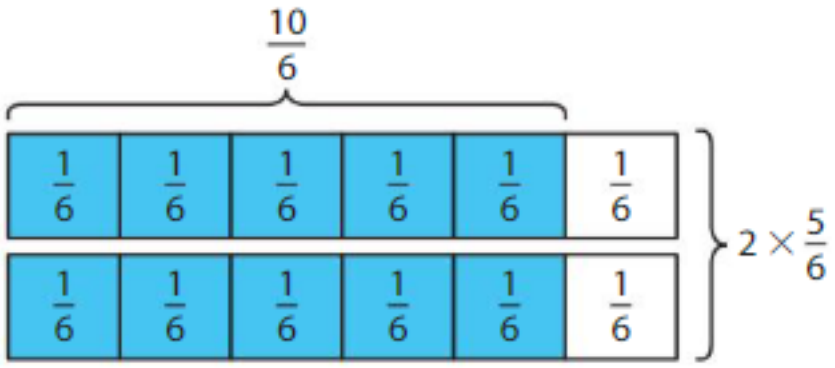
Key Idea You can find the product of a fraction and a whole number by multiplying the numerator and the whole number. Then write the result over the denominator.

Example Find $2 \times \frac{5}{6}$.

Multiply the numerator and the whole number.

$$2 \times \frac{5}{6} = \frac{\square \times \square}{6}$$

$$= \frac{\square}{6}, \text{ or } \frac{\square}{\square}$$

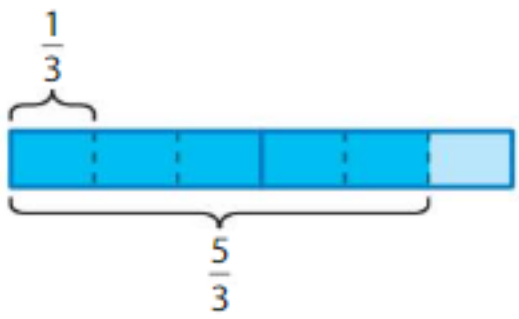


Example Find $\frac{5}{6} \times 2$.

Multiply the numerator and the whole number.

$$\frac{5}{6} \times 2 = \frac{\square \times \square}{6}$$

$$= \frac{\square}{6}, \text{ or } \frac{\square}{\square}$$



Divide 2 into 6 parts and take 5 of the parts.



Show and Grow

Multiply.

1. $3 \times \frac{5}{8} =$ _____

2. $6 \times \frac{4}{9} =$ _____

3. $\frac{2}{5} \times 15 =$ _____

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Name _____

Apply and Grow: Practice

Multiply.

4. $\frac{3}{5} \times 2 =$ _____

5. $5 \times \frac{2}{9} =$ _____

6. $\frac{5}{6} \times 4 =$ _____

7. $8 \times \frac{3}{10} =$ _____

8. $\frac{1}{5} \times 7 =$ _____

9. $9 \times \frac{5}{12} =$ _____

10. $15 \times \frac{5}{8} =$ _____

11. $\frac{3}{4} \times 20 =$ _____

12. $\frac{7}{9} \times 5 =$ _____

13. One-tenth of the 50 states in the United States of America have a mockingbird as their state bird. How many states have a mockingbird as their state bird?



14. **Writing** Explain why $9 \times \frac{2}{3}$ is equivalent to $\frac{2}{3} \times 9$.

15. MP **Reasoning** Without calculating, determine which product is greater. Explain.

$\frac{1}{8} \times 24$ $\frac{7}{8} \times 24$

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Think and Grow: Modeling Real Life



Example Newton buys 27 songs. Two-thirds of them are classical songs. Descartes buys 16 songs. Seven-eighths of them are classical songs. Who buys more classical songs? How many more?

Multiply $\frac{2}{3}$ by 27 to find the number of classical songs Newton buys. Multiply $\frac{7}{8}$ by 16 to find the number Descartes buys.

Newton: $\frac{2}{3} \times 27 = \frac{\square \times \square}{3}$

$= \frac{\square}{3}$

$=$ _____

Descartes: $\frac{7}{8} \times 16 = \frac{\square \times \square}{8}$

$= \frac{\square}{8}$

$=$ _____

So, _____ buys more classical songs.

Subtract the products to find how many more.

$18 - 14 =$ _____

_____ buys _____ more classical songs than _____.

Show and Grow

16. You take 48 pictures on a walking tour. Five-twelfths of them are of buildings. Your friend takes 45 pictures. Six-fifteenths of them are of buildings. Who takes more pictures of buildings? How many more?

17. You have 72 rocks in your rock collection. Five-eighths of them are sedimentary, one-sixth of them are igneous, and the rest are metamorphic. How many of your rocks are metamorphic?

18. DIG DEEPER! Each day, you spend $\frac{3}{4}$ hour reading and $\frac{1}{2}$ hour writing in a journal. How many total hours do you spend reading and writing in 1 week? Describe two ways to solve the problem.



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Name _____

Homework & Practice 9.3

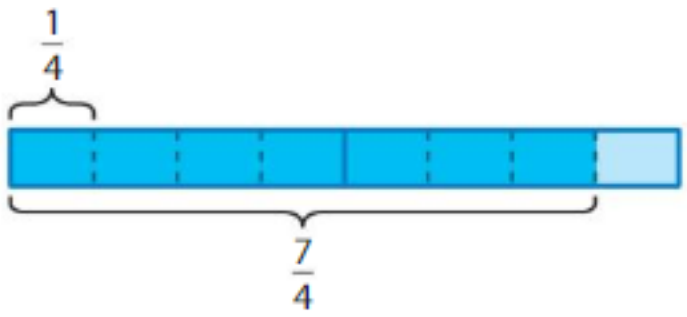
Learning Target: Multiply fractions and whole numbers.

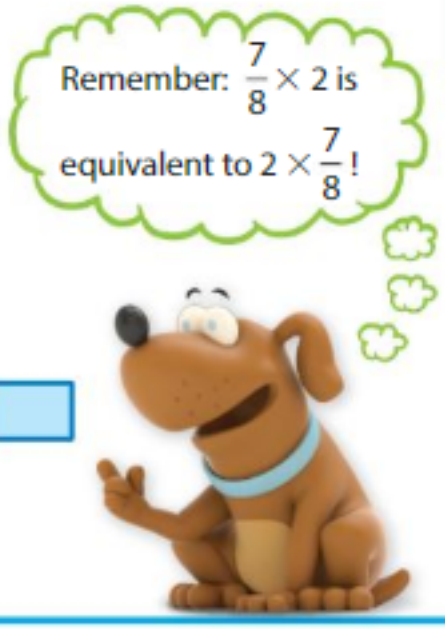
Example Find $\frac{7}{8} \times 2$.

Multiply the numerator and the whole number.

$$\frac{7}{8} \times 2 = \frac{\boxed{7} \times \boxed{2}}{8}$$

$$= \frac{\boxed{14}}{8}, \text{ or } \frac{\boxed{7}}{\boxed{4}}$$





Multiply.

1. $\frac{5}{6} \times 3 =$ _____

2. $\frac{2}{3} \times 6 =$ _____

3. $7 \times \frac{1}{8} =$ _____

4. $2 \times \frac{1}{2} =$ _____

5. $\frac{4}{5} \times 9 =$ _____

6. $4 \times \frac{5}{12} =$ _____

7. $\frac{1}{4} \times 24 =$ _____

8. $16 \times \frac{3}{8} =$ _____

9. $\frac{7}{10} \times 25 =$ _____

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10. You spend $\frac{3}{4}$ hour jumping rope every week for 8 weeks. How many hours do you jump rope altogether?



11. **Logic** Your friend finds 25 items that are either insects or flowers. She says that $\frac{1}{6}$ of the items are insects. Can this be true? Explain.

12. **Open-Ended** Write two different pairs of fractions that could represent the insects and flowers your friend finds in Exercise 11.

13. **Modeling Real Life** Newton bakes 56 treats. Five-eighths of them contain peanut butter. Descartes bakes 120 treats. Five-sixths of them contain peanut butter. Who bakes more peanut butter treats? How many more?

14. **Modeling Real Life** Your class conducts an egg-dropping experiment with 60 eggs. Three-fifths of the eggs break open, one-sixth of the eggs crack, and the rest do not break at all. How many of the eggs do *not* crack or break open?



Review & Refresh

Add.

15. $5\frac{5}{8} + 6\frac{3}{4} =$ _____

16. $1\frac{5}{6} + 8\frac{1}{12} =$ _____

17. $3\frac{1}{2} + \frac{3}{5} + 2\frac{7}{10} =$ _____

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Name _____

Use Models to Multiply Fractions

9.4

Learning Target: Use models to multiply a fraction by a fraction.

Success Criteria:

- I can divide a whole into equal parts.
- I can divide a unit fraction into equal parts.
- I can use a model to find the product of two fractions.

FLORIDA STANDARDS

MAFS.5.NF.2.4a
MAFS.5.NF.2.6

Explore and Grow

Fold a sheet of paper in half. Shade $\frac{1}{4}$ of either half. What fraction of the entire sheet of paper did you shade? Draw a model to support your answer.

MP **Reasoning** What multiplication expression does your model represent? Explain your reasoning.

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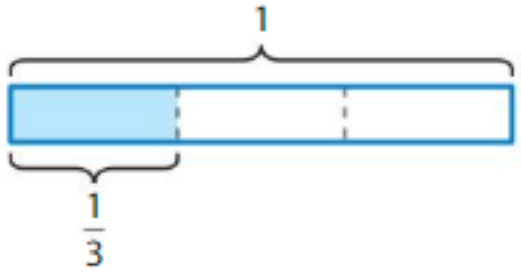
Think and Grow: Use Models to Multiply Fractions

You can use models to multiply a fraction by a fraction.

Example Find $\frac{1}{2} \times \frac{1}{3}$.

One Way: Use a tape diagram to find $\frac{1}{2}$ of $\frac{1}{3}$.

Step 1: Model $\frac{1}{3}$. Divide 1 whole into 3 equal parts.



Step 2: To find $\frac{1}{2}$ of $\frac{1}{3}$, divide each $\frac{1}{3}$ into 2 equal parts.



Because the 6 parts make 1 whole, 1 part represents _____. So, $\frac{1}{2} \times \frac{1}{3} =$ _____.

Another Way: Use an area model with 2 rows and 3 columns to find $\frac{1}{2} \times \frac{1}{3}$.

Step 1: Shade 1 of the 2 rows blue to represent $\frac{1}{2}$.



Step 2: Shade 1 of the 3 columns red to represent $\frac{1}{3}$.

The purple overlap shows the product.

_____ out of _____ parts is purple.

So, $\frac{1}{2} \times \frac{1}{3} =$ _____.

Show and Grow

Multiply. Use a model to help.

1. $\frac{1}{3} \times \frac{1}{4} =$ _____

2. $\frac{2}{3} \times \frac{1}{2} =$ _____

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Name _____

Apply and Grow: Practice

Multiply. Use a model to help.

3. $\frac{1}{2} \times \frac{1}{6} =$ _____

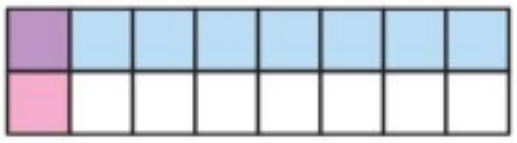
4. $\frac{1}{5} \times \frac{1}{8} =$ _____

5. $\frac{1}{4} \times \frac{1}{6} =$ _____

6. $\frac{2}{3} \times \frac{1}{3} =$ _____

Write a multiplication equation represented by the model.

7.



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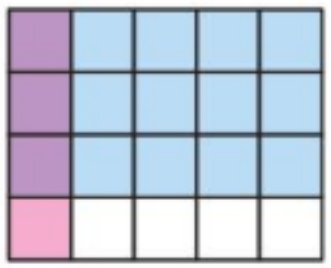


9. One-fifth of the students in your school have tried skating. Of those students, $\frac{1}{7}$ have tried ice skating. What fraction of students in your school have tried ice skating?

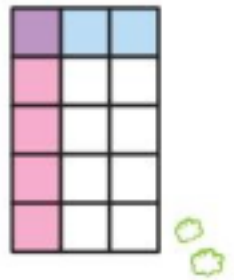
10. DIG DEEPER! Are both Newton and Descartes correct? Explain.

$\frac{1}{3} \times \frac{1}{5} = \frac{1}{15}$





$\frac{1}{5} \times \frac{1}{3} = \frac{1}{15}$





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Think and Grow: Modeling Real Life

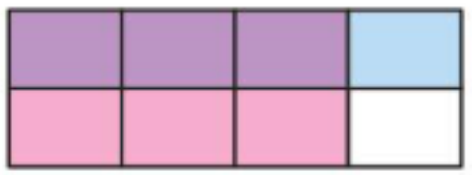


Example A recipe calls for $\frac{3}{4}$ teaspoon of cinnamon. You want to halve the recipe. What fraction of a teaspoon of cinnamon do you need?

Because you want to halve the recipe, multiply $\frac{1}{2}$ by $\frac{3}{4}$ to find how many teaspoons of cinnamon you need.

Use an area model with 2 rows and 4 columns to find $\frac{1}{2} \times \frac{3}{4}$.

Step 1: Shade 1 of the 2 rows blue to represent $\frac{1}{2}$.



Step 2: Shade 3 of the 4 columns red to represent $\frac{3}{4}$.

The purple overlap shows the product.

_____ out of _____ parts are purple.

So, $\frac{1}{2} \times \frac{3}{4} =$ _____.

You need _____ teaspoon of cinnamon.

Show and Grow

11. The mass of a mango is $\frac{2}{5}$ kilogram.

The mass of a guava is $\frac{1}{4}$ as much as the mango. What is the mass of the guava?



12. A giant panda spends $\frac{2}{3}$ of 1 day eating and foraging. It spends $\frac{3}{4}$ of that time eating bamboo. What fraction of 1 day does the panda spend eating bamboo?

13. **DIG DEEPER!** You have a half-gallon carton of milk that you use only for cereal. You use the same amount each day for 5 days. There is $\frac{3}{8}$ of the carton left. How many cups of milk do you use each day? Explain.

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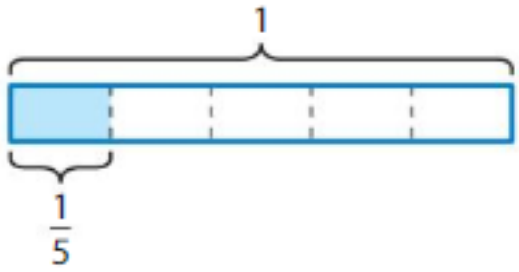
Name _____

Homework & Practice 9.4

Learning Target: Use models to multiply a fraction by a fraction.

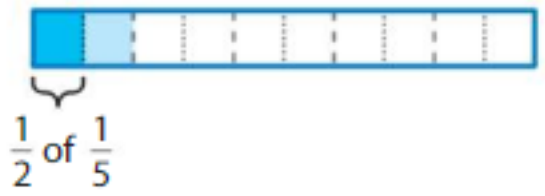
Example Find $\frac{1}{2} \times \frac{1}{5}$.

One Way: Use a tape diagram to find $\frac{1}{2}$ of $\frac{1}{5}$.



Step 1: Model $\frac{1}{5}$. Divide 1 whole into 5 equal parts.

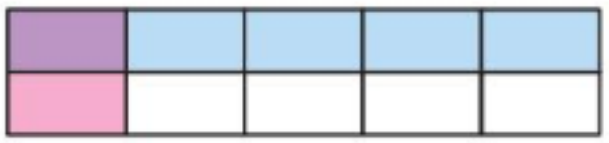
Step 2: To find $\frac{1}{2}$ of $\frac{1}{5}$, divide each $\frac{1}{5}$ into 2 equal parts.



Because the 10 parts make 1 whole, 1 part represents $\frac{1}{10}$. So, $\frac{1}{2} \times \frac{1}{5} = \frac{1}{10}$.

Another Way: Use an area model.

Shade 1 of the 2 rows blue to represent $\frac{1}{2}$. Shade 1 of the 5 columns red to represent $\frac{1}{5}$. The purple overlap shows the product.



1 out of 10 parts is purple.

So, $\frac{1}{2} \times \frac{1}{5} = \frac{1}{10}$.

Multiply. Use a model to help.

1. $\frac{1}{3} \times \frac{1}{7} =$ _____

2. $\frac{1}{2} \times \frac{1}{9} =$ _____

3. $\frac{2}{5} \times \frac{1}{6} =$ _____

4. $\frac{3}{4} \times \frac{2}{7} =$ _____

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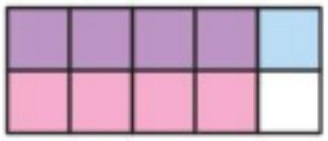
Write a multiplication equation represented by the model.

5.



6.



7. One sixth of the animals at a zoo are birds. Of the birds, $\frac{1}{3}$ are female. What fraction of the animals at the zoo are female birds?

8. **Writing** Write and solve a real-life problem for the expression.

$$\frac{2}{3} \times \frac{3}{7}$$

9. **Modeling Real Life** A Gouldian finch is $\frac{1}{2}$ the length of the sun conure. How long is the Gouldian finch?



Sun conure: $\frac{11}{12}$ ft



Gouldian finch

10. **DIG DEEPER!** A recipe calls for $\frac{2}{3}$ cup of chopped walnuts. You chop 4 walnuts and get $\frac{1}{4}$ of the amount you need. How much more of a cup of chopped walnuts do you need? All of your walnuts are the same size. How many more walnuts should you chop? Explain.

Review & Refresh

Subtract.

11. $5 - 1\frac{3}{4} =$ ____

12. $13\frac{1}{4} - 7\frac{5}{8} =$ ____

13. $12\frac{7}{10} - 5\frac{3}{10} - 1\frac{1}{5} =$ ____

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Name _____

Multiply Fractions 9.5

Learning Target: Multiply a fraction by a fraction.

Success Criteria:

- I can multiply the numerators of two fractions.
- I can multiply the denominators of two fractions.
- I can use a rule to find the product of two fractions.

FLORIDA STANDARDS

MAFS.5.NF.2.4a
MAFS.5.NF.2.6

Explore and Grow

Use models to help you complete the table. What do you notice about each expression and its product?

Expression	Product
$\frac{1}{2} \times \frac{1}{5}$	
$\frac{3}{4} \times \frac{1}{2}$	
$\frac{1}{2} \times \frac{3}{5}$	
$\frac{2}{3} \times \frac{2}{3}$	

MP **Construct Arguments** Explain how to multiply two fractions without using a model.

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Think and Grow: Multiply Fractions

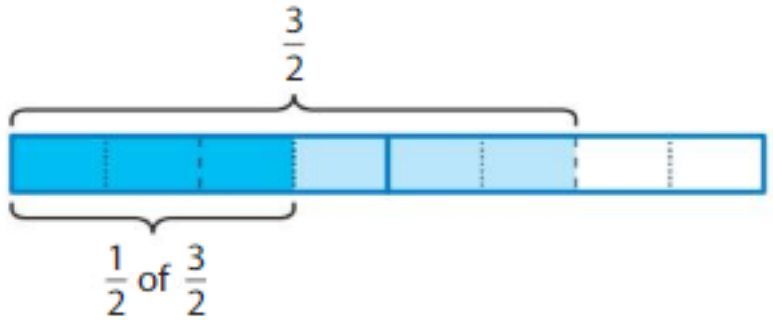
Key Idea You can find the product of a fraction and a fraction by multiplying the numerators and multiplying the denominators.

Example Find $\frac{1}{2} \times \frac{3}{2}$.

Multiply the numerators and multiply the denominators.

$$\frac{1}{2} \times \frac{3}{2} = \frac{\square \times \square}{\square \times \square}$$

$$= \frac{\square}{\square}$$

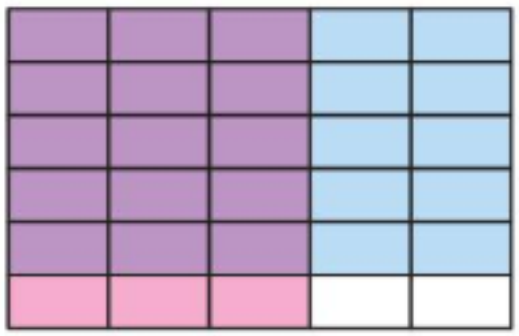


Example Find $\frac{5}{6} \times \frac{3}{5}$.

Multiply the numerators and multiply the denominators.

$$\frac{5}{6} \times \frac{3}{5} = \frac{\square \times \square}{\square \times \square}$$

$$= \frac{\square}{\square}, \text{ or } \frac{\square}{\square}$$





Show and Grow

Multiply.

1. $\frac{1}{2} \times \frac{4}{3} =$ _____

2. $\frac{2}{5} \times \frac{2}{3} =$ _____

3. $\frac{3}{4} \times \frac{5}{8} =$ _____

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Name _____

Apply and Grow: Practice

Multiply.

4. $\frac{1}{4} \times \frac{1}{4} =$ _____

5. $\frac{5}{6} \times \frac{7}{10} =$ _____

6. $\frac{6}{9} \times \frac{8}{2} =$ _____

7. $\frac{21}{100} \times \frac{3}{5} =$ _____

8. $\frac{1}{12} \times \frac{9}{4} =$ _____

9. $\frac{4}{7} \times \frac{8}{8} =$ _____

Evaluate.

10. $\left(\frac{1}{2} \times \frac{7}{8}\right) \times 2 =$ _____

11. $\left(\frac{7}{6} - \frac{5}{6}\right) \times \frac{2}{3} =$ _____

12. $\frac{9}{10} \times \left(\frac{4}{9} + \frac{1}{3}\right) =$ _____

13. At a school, $\frac{3}{4}$ of the students play a sport. Of the students that play a sport, $\frac{1}{5}$ play baseball. What fraction of the students at the school play baseball?



14. MP **Reasoning** Descartes says he can find the product of a whole number and a fraction the same way he finds the product of two fractions. Explain why his reasoning makes sense.

15. **Writing** Explain how multiplying fractions is different than adding and subtracting fractions.

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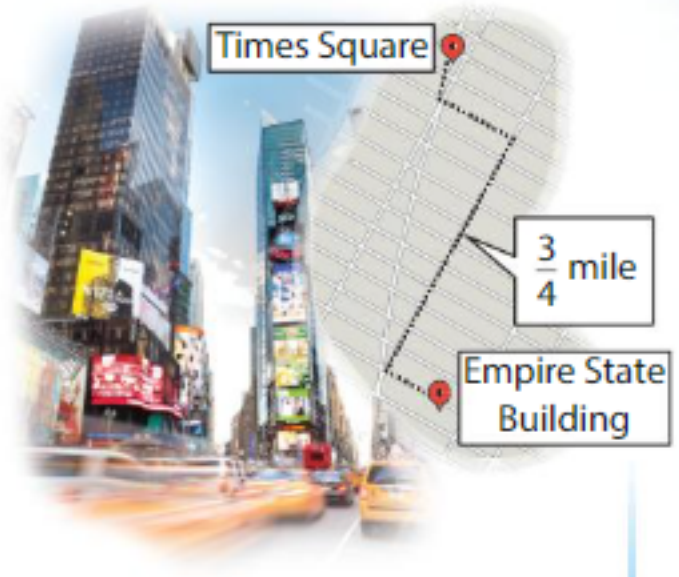
Think and Grow: Modeling Real Life

Example A tourist is walking from the Empire State Building to Times Square. She is $\frac{2}{3}$ of the way there. What fraction of a mile does she have left to walk?



Find the distance she has walked. Because she has walked $\frac{2}{3}$ of $\frac{3}{4}$ mile, multiply $\frac{2}{3}$ by $\frac{3}{4}$.

$$\frac{2}{3} \times \frac{3}{4} = \frac{\square \times \square}{\square \times \square}$$

$$= \frac{\square}{\square}, \text{ or } \frac{\square}{\square}$$

The tourist has walked _____ mile.

Subtract the product from $\frac{3}{4}$ mile to find how many miles she has left to walk.

$$\frac{3}{4} - \frac{1}{2} = \frac{3}{4} - \frac{\square}{4}$$

Rewrite $\frac{1}{2}$ as $\frac{1 \times 2}{2 \times 2} = \frac{2}{4}$.

$$= \frac{\square}{4}$$

So, the tourist has _____ mile left to walk.

Show and Grow

16. At a zoo, $\frac{3}{5}$ of the animals are mammals. Of the mammals, $\frac{5}{12}$ are primates. What fraction of the animals at the zoo are *not* primates?



17. You have an album of 216 trading cards. One page contains $\frac{1}{24}$ of the cards. On that page, $\frac{2}{3}$ of the cards are epic. You only have one page with any epic cards. How many epic cards do you have?

18. **DIG DEEPER!** In a class, $\frac{2}{5}$ of the students play basketball and $\frac{7}{10}$ play soccer. Of the students who play basketball, $\frac{2}{3}$ also play soccer. There are 30 students in the class. How many students play soccer but do *not* play basketball?

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Name _____

Homework & Practice 9.5

Learning Target: Multiply a fraction by a fraction.

Example Find $\frac{2}{3} \times \frac{7}{8}$.

Multiply the numerators and multiply the denominators.

$$\frac{2}{3} \times \frac{7}{8} = \frac{\boxed{2} \times \boxed{7}}{\boxed{3} \times \boxed{8}}$$

$$= \frac{\boxed{14}}{\boxed{24}}, \text{ or } \frac{\boxed{7}}{\boxed{12}}$$





Multiply.

1. $\frac{1}{4} \times \frac{1}{5} =$ _____

2. $\frac{2}{7} \times \frac{1}{2} =$ _____

3. $\frac{9}{10} \times \frac{2}{3} =$ _____

4. $\frac{5}{8} \times \frac{5}{6} =$ _____

5. $\frac{9}{7} \times \frac{3}{4} =$ _____

6. $\frac{11}{100} \times \frac{2}{5} =$ _____

7. $\frac{7}{20} \times \frac{6}{2} =$ _____

8. $\frac{15}{16} \times \frac{1}{3} =$ _____

9. $\frac{5}{12} \times \frac{3}{10} =$ _____

Evaluate.

10. $3 \times \left(\frac{2}{3} \times \frac{1}{8}\right) =$ _____

11. $\left(\frac{1}{3} + \frac{1}{3}\right) \times \frac{4}{5} =$ _____

12. $\frac{6}{7} \times \left(\frac{3}{4} - \frac{5}{12}\right) =$ _____

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13. A pancake recipe calls for $\frac{1}{3}$ cup of water. You want to halve the recipe. What fraction of a cup of water do you need?

14. MP **Number Sense** Which is greater, $\frac{3}{4} \times \frac{1}{5}$ or $\frac{3}{4} \times \frac{1}{8}$? Explain.

15. MP **Reasoning** Is $\frac{17}{24} \times \frac{7}{8}$ equal to $\frac{17}{8} \times \frac{7}{24}$? Explain.

16. MP **Number Sense** In which expressions does $k = \frac{5}{6}$?

$\frac{1}{2} \times \frac{5}{3} = k$

$\frac{1}{10} \times k = \frac{1}{12}$

$\frac{1}{3} \times k = \frac{2}{9}$

$\frac{5}{4} \times \frac{2}{3} = k$

17. **Modeling Real Life** At a town hall meeting, $\frac{37}{50}$ of the members are present. Of those who are present, $\frac{1}{2}$ vote in favor of a new park. What fraction of the members do *not* vote in favor of the new park?

18. **Modeling Real Life** There are 50 U.S. states. Seven twenty-fifths of the states share a land border with Canada or Mexico. Of those states, $\frac{2}{7}$ share a border with Mexico. How many states share a border with Canada?

Review & Refresh

Evaluate. Check whether your answer is reasonable.

19. $15.67 + 4 + 6.5 =$ _____

20. $20.7 - 9.54 + 25.81 =$ _____

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Name _____

Find Areas of Rectangles 9.6

Learning Target: Find areas of rectangles.

Success Criteria:

- I can find the area of a rectangle with unit fraction side lengths.
- I can find the number of rectangles with unit fraction side lengths it takes to fill a rectangle.
- I can find the area of a rectangle with fractional side lengths.

FLORIDA STANDARDS

MAFS.5.NF.2.4b
MAFS.5.NF.2.6

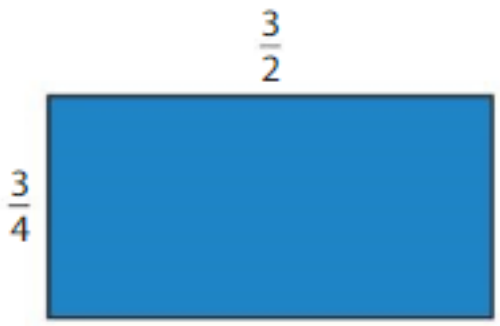
Explore and Grow

Draw and cut out a rectangle that has any two of the side lengths below.

$\frac{1}{2}$ ft $\frac{1}{3}$ ft $\frac{1}{4}$ ft

Use several copies of your rectangle to create a unit square. What is the area (in square feet) of each small rectangle? Explain your reasoning.

MP **Reasoning** How can you use a rectangle with unit fraction side lengths to find the area of the rectangle below? Explain your reasoning.



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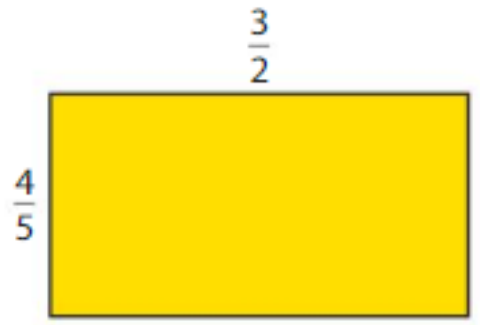
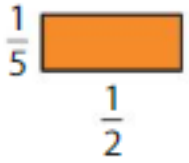
Think and Grow: Find Areas of Rectangles

One way to find the area of a rectangle with fractional side lengths is to fill it with smaller rectangles.

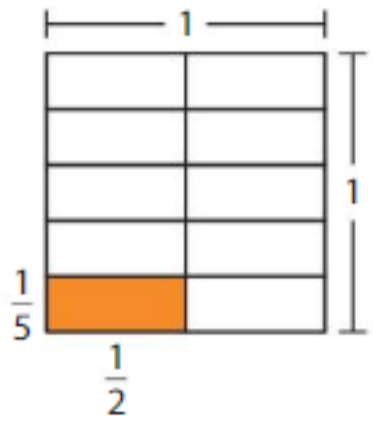
Example Find the area of the rectangle.



Step 1: Use the denominators of the side lengths to find a smaller rectangle with unit fraction side lengths.

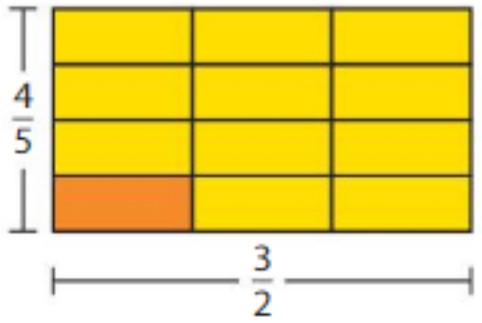


Step 2: Find the area of a rectangle with side lengths of $\frac{1}{5}$ and $\frac{1}{2}$.



There are $5 \times 2 =$ _____ of these rectangles in a unit square, so the area of each is _____ square unit.

Step 3: Find the area of the large rectangle.



It takes $4 \times 3 =$ _____ of the smaller rectangles to fill the large rectangle. So, the area of the large rectangle is

$12 \times \frac{1}{10} =$ _____, or _____ square units.

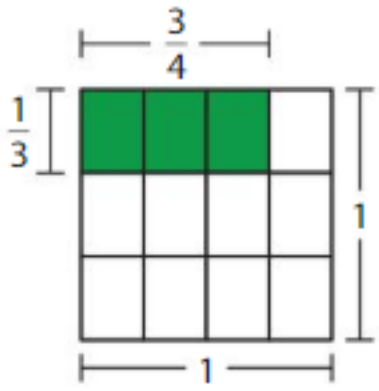
This example shows why you can multiply the length and the width to find the area of a rectangle with fractional side lengths.

$\frac{1}{5} \times \frac{1}{2} = \frac{1}{10}$ and $\frac{4}{5} \times \frac{3}{2} = \frac{12}{10}$



Show and Grow

1. Find the area of the shaded region.



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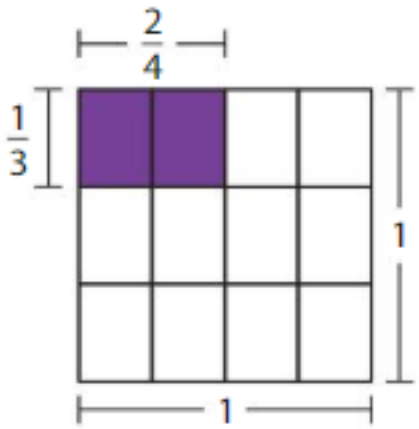
Name _____

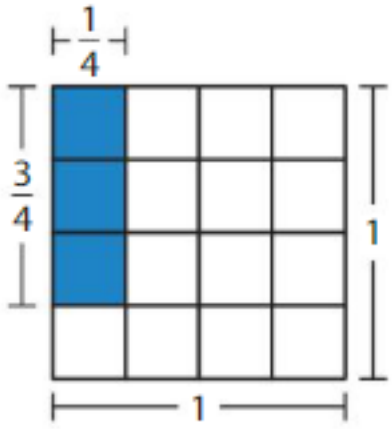
Apply and Grow: Practice

Find the area of the shaded region.

2.

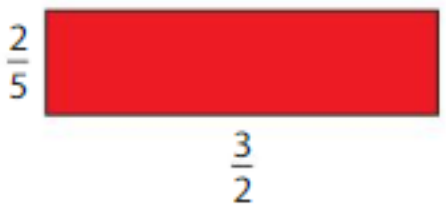


3.

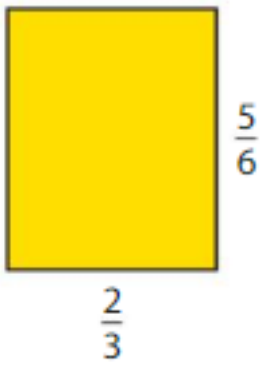


Use rectangles with unit fraction side lengths to find the area of the rectangle.

4.



5.



6. Find the area of a rectangle with side lengths of $\frac{5}{8}$ and $\frac{4}{3}$.

7. Find the area of a rectangle with side lengths of $\frac{7}{9}$ and $\frac{1}{2}$.

8. MP **Reasoning** Can you find the area of a rectangle with fractional side lengths the same way you find the area of a rectangle with whole number side lengths? Explain.

9. **YOU BE THE TEACHER** Your friend says she can find the area of a square given only one fractional side length. Is your friend correct? Explain.

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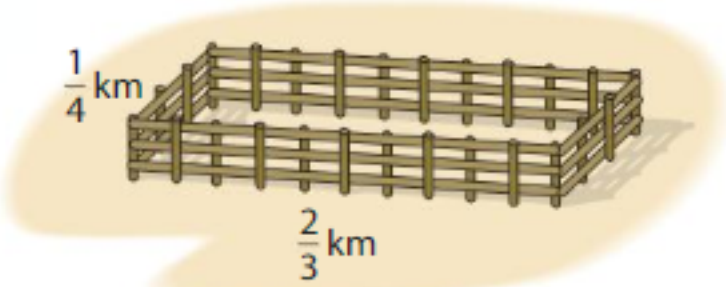
Think and Grow: Modeling Real Life

Example A zoo needs an outdoor enclosure with an area of at least $\frac{3}{10}$ square kilometer for a camel. Is the rectangular enclosure shown large enough for a camel?



Find the area of the enclosure by multiplying the length and the width.

$$\frac{1}{4} \times \frac{2}{3} = \frac{1 \times 2}{4 \times 3}$$

$$= \frac{\square}{\square}, \text{ or } \frac{\square}{\square} \text{ square kilometer}$$

To determine whether the enclosure is large enough, compare $\frac{1}{6}$ and $\frac{3}{10}$.

Write the fractions with a common denominator.

$$\frac{1}{6} = \frac{1 \times 10}{6 \times 10} = \frac{\square}{60} \qquad \frac{3}{10} = \frac{3 \times 6}{10 \times 6} = \frac{\square}{60}$$

$$\frac{\square}{60} \bigcirc \frac{\square}{60}$$

So, the enclosure _____ large enough for a camel.

Show and Grow

10. The area of a square dog kennel is 4 square yards. Will the square mat fit in the kennel?



11. **DIG DEEPER!** The side lengths of each chalk art square are $\frac{11}{4}$ meters. The side lengths of the square zone around each chalk square are an additional $\frac{3}{4}$ meter. How many square meters of concrete are used to create the chalk walk shown?



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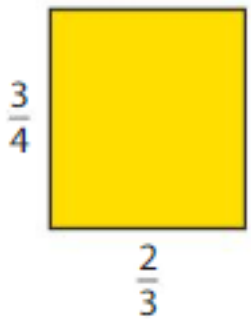
Name _____

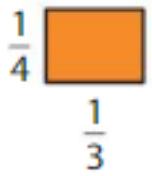
Homework & Practice 9.6

Learning Target: Find areas of rectangles.

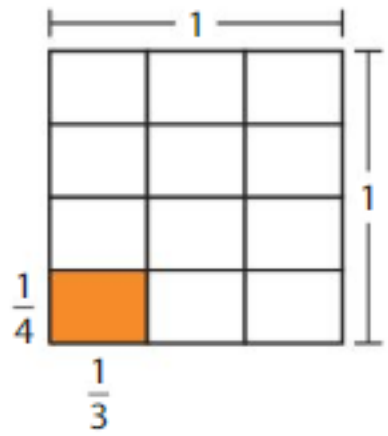
Example Find the area of the rectangle.



Step 1: Use the denominators of the side lengths to find a smaller rectangle with unit fraction side lengths.

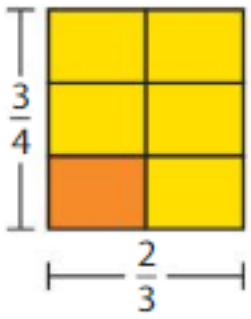


Step 2: Find the area of a rectangle with side lengths of $\frac{1}{4}$ and $\frac{1}{3}$.



There are $4 \times 3 =$ 12 of these rectangles in a unit square, so the area of each is $\frac{1}{12}$ square unit.

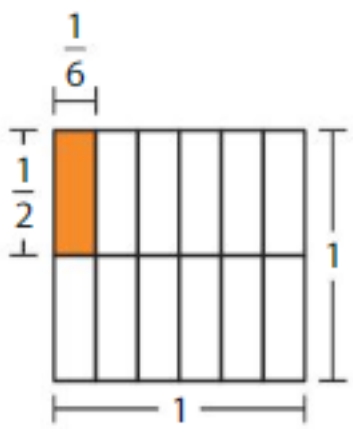
Step 3: Find the area of the large rectangle.



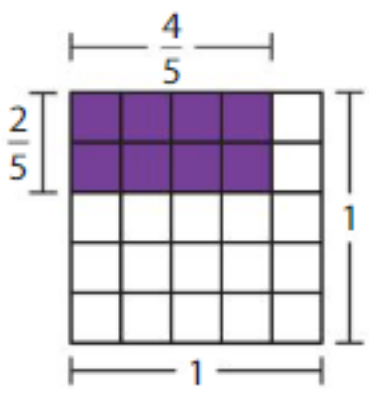
It takes $3 \times 2 =$ 6 of the smaller rectangles to fill the large rectangle. So, the area of the large rectangle is 6 × $\frac{1}{12}$ = $\frac{6}{12}$, or $\frac{1}{2}$ square unit.

Find the area of the shaded region.

1.



2.



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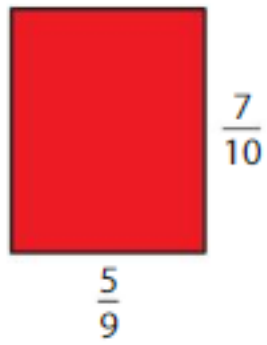
Use rectangles with unit fraction side lengths to find the area of the rectangle.

3.



4.

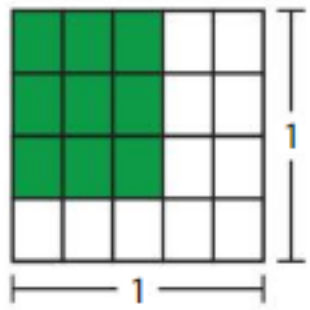


5. Find the area of a rectangle with side lengths of $\frac{3}{4}$ and $\frac{5}{12}$.

6. Find the area of a square with a side length of $\frac{9}{16}$.

7. **Open-Ended** The area of a rectangle is $\frac{16}{24}$. What are possible side lengths of the rectangle?

8. **Structure** Write an expression that represents the area of the shaded rectangle.



9. **Modeling Real Life** The area of a square table is 9 square feet. Will the board game fit on the table?



Review & Refresh

Divide. Then check your answer.

10. 365 ÷ 14 = _____

11. 282 ÷ 27 = _____

12. 601 ÷ 72 = _____

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Name _____

Multiply Mixed Numbers 9.7

Learning Target: Multiply a mixed number by a mixed number.

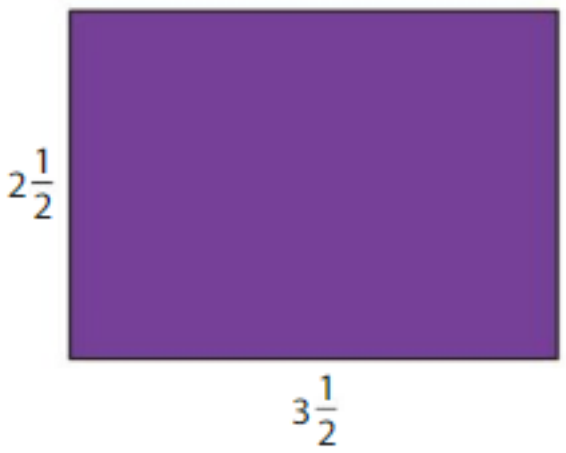
Success Criteria:

- I can use a model to find the product of two mixed numbers.
- I can rewrite mixed numbers as improper fractions to find their products.
- I can find the product of two mixed numbers.

FLORIDA STANDARDS
MAFS.5.NF.2.6

Explore and Grow

Find the area of the rectangle. Explain how you found your answer.



MP **Structure** Find the area using a different method. Explain how you found your answer.

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Think and Grow: Multiply Mixed Numbers

You can use a model to find the product of two mixed numbers. You can also write the mixed numbers as improper fractions and then multiply.

Example Find $1\frac{1}{2} \times 2\frac{3}{4}$.

One Way: Use an area model.

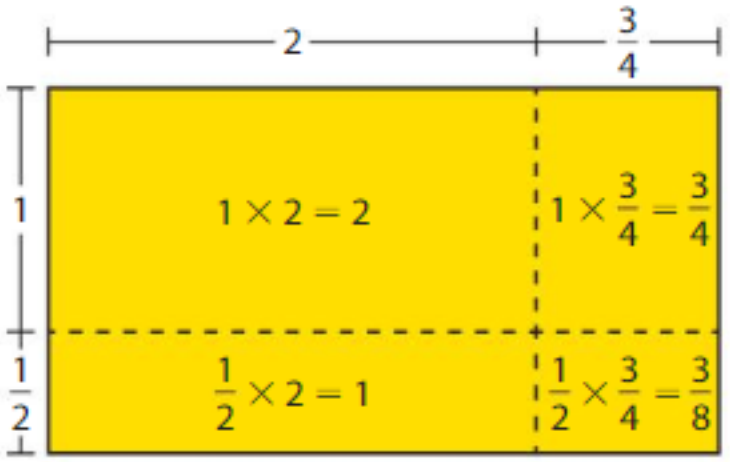
Step 1: Write each mixed number as a sum. $1\frac{1}{2} = 1 + \frac{1}{2}$ $2\frac{3}{4} = 2 + \frac{3}{4}$

Step 2: Draw an area model that represents the product of the sums.

Step 3: Find the sum of the areas of the sections.

$$(2 + 1) + \left(\frac{3}{4} + \frac{3}{8}\right) = 3 + \frac{\square}{\square}$$

$$= \square\frac{\square}{\square}$$



So, $1\frac{1}{2} \times 2\frac{3}{4} =$ _____.

Another Way: Write each mixed number as an improper fraction, then multiply.

$$1\frac{1}{2} \times 2\frac{3}{4} = \frac{3}{2} \times \frac{11}{4}$$

$$= \frac{\square \times \square}{\square \times \square}$$

$$= \frac{\square}{\square}, \text{ or } \square\frac{\square}{\square}$$



Show and Grow

Multiply.

1. $2\frac{1}{2} \times 1\frac{1}{2} =$ _____

2. $3\frac{1}{4} \times 2\frac{2}{3} =$ _____

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Name _____

Apply and Grow: Practice

Multiply.

3. $1\frac{3}{4} \times 2\frac{1}{6} =$ _____

4. $4\frac{1}{3} \times 1\frac{5}{6} =$ _____

5. $3\frac{2}{5} \times 1\frac{9}{10} =$ _____

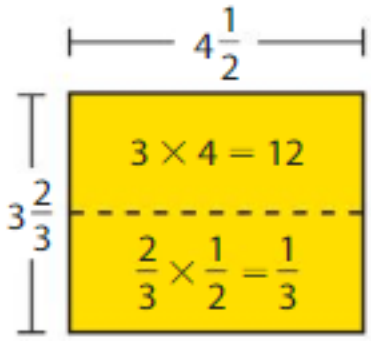
6. $2\frac{3}{8} \times 3\frac{1}{2} =$ _____

Evaluate.

7. $5\frac{1}{4} \times \frac{2}{5} \times 6\frac{1}{12} =$ _____

8. $3\frac{2}{3} \times \left(10\frac{7}{8} - 2\frac{1}{4}\right) =$ _____

9. **YOU BE THE TEACHER** Your friend uses the model to find $4\frac{1}{2} \times 3\frac{2}{3}$. Is your friend correct? Explain.



$12 + \frac{1}{3} = 12\frac{1}{3}$

10. **Logic** Find the missing numbers.

$$\square\frac{1}{4} \times 5\frac{1}{\square} = 6\frac{7}{8}$$

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Think and Grow: Modeling Real Life



Example A construction crew is paving 15 miles of a highway. The crew paves $4\frac{2}{10}$ miles each month. Does the crew finish paving the highway in $3\frac{1}{2}$ months?

Find the length of the highway the crew paves by multiplying the number of months by the number of miles they pave each month. Write each mixed number as an improper fraction, then multiply.

$3\frac{1}{2} \times 4\frac{2}{10} = \frac{7}{2} \times \frac{42}{10}$

$= \frac{\square \times \square}{\square \times \square}$

$= \frac{\square}{\square}$, or $\square\frac{\square}{\square}$

Estimate _____

Reasonable? _____ is close to _____. ✓

So, the crew paves _____ miles.

Compare the length the crew paves to the amount that needs to be paved.

The crew _____ finish paving the highway in $3\frac{1}{2}$ months.

Show and Grow

11. You have 3 cups of strawberries. You want to make $1\frac{1}{2}$ batches of the recipe. Do you have enough strawberries?

Strawberry Smoothie

- $1\frac{3}{4}$ cups of strawberries
- $\frac{3}{4}$ cup of yogurt
- 1 teaspoon lemon juice
- 2 tablespoons honey
- 1 cup ice

12. On Monday, you roller-skate $6\frac{1}{4}$ miles. On Tuesday, you skate $1\frac{2}{5}$ times as far as you did on Monday. How many total miles do you roller-skate on Monday and Tuesday combined?

13. **DIG DEEPER!** An artist paints a rectangular mural. The mural is $4\frac{1}{3}$ feet wide. The length is $2\frac{1}{4}$ times the width. What is the area of the mural?

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Name _____

Homework & Practice 9.7

Learning Target: Multiply a mixed number by a mixed number.

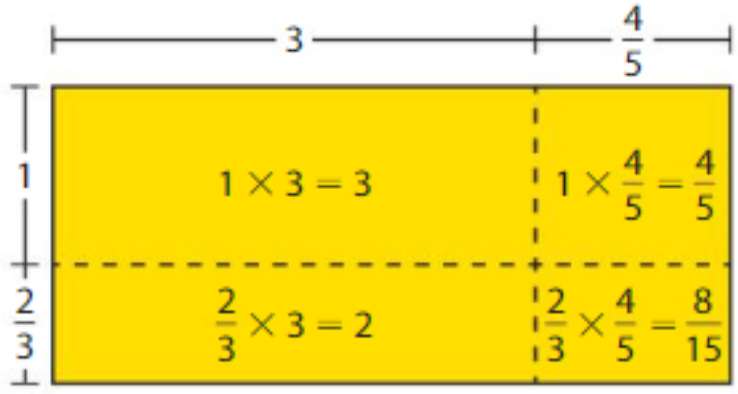
Example Find $1\frac{2}{3} \times 3\frac{4}{5}$.

One Way: Use an area model.

Step 1: Write each mixed number as a sum. $1\frac{2}{3} = 1 + \frac{2}{3}$ $3\frac{4}{5} = 3 + \frac{4}{5}$

Step 2: Draw an area model that represents the product of the sums.

Step 3: Find the sum of the areas of the sections.



$$(3 + 2) + \left(\frac{4}{5} + \frac{8}{15}\right) = 5 + \frac{\boxed{20}}{\boxed{15}}$$

$$= \boxed{6}\frac{\boxed{1}}{\boxed{3}}$$

So, $1\frac{2}{3} \times 3\frac{4}{5} = \underline{\quad 6\frac{1}{3} \quad}$.

Another Way: Write each mixed number as an improper fraction, then multiply.

$$1\frac{2}{3} \times 3\frac{4}{5} = \frac{5}{3} \times \frac{19}{5}$$

$$= \frac{\boxed{5} \times \boxed{19}}{\boxed{3} \times \boxed{5}}$$

$$= \frac{\boxed{95}}{\boxed{15}}, \text{ or } \boxed{6}\frac{\boxed{1}}{\boxed{3}}$$

Multiply.

1. $1\frac{1}{2} \times 1\frac{1}{8} =$ _____

2. $1\frac{5}{6} \times 2\frac{1}{4} =$ _____

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Evaluate.

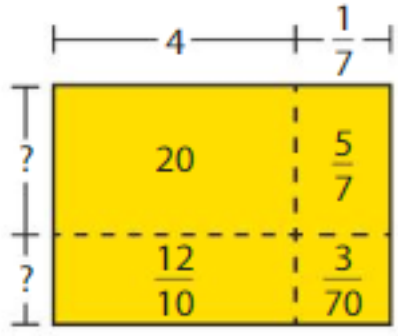
3. $2\frac{3}{8} \times 2\frac{3}{4} =$ _____

4. $4\frac{1}{6} \times 3\frac{2}{7} =$ _____

5. $2\frac{1}{3} \times 3\frac{9}{10} \times 5\frac{1}{5} =$ _____

6. $\left(1\frac{7}{8} + 4\frac{4}{5}\right) \times 2\frac{1}{12} =$ _____

7. MP **Structure** Find the missing numbers.



8. **YOU BE THE TEACHER** Your friend finds $1\frac{11}{12} \times 2\frac{3}{8}$. Is your friend correct? Explain.

$1\frac{11}{12} \times 2\frac{3}{8} = \frac{23}{12} \times \frac{19}{8} = \frac{437}{96}$, or $4\frac{53}{96}$

9. **Modeling Real Life** Your friend earns $7\frac{1}{2}$ dollars each hour. Will she earn enough money to buy a \$35 toy after working $4\frac{3}{4}$ hours?

10. **Modeling Real Life** One class collects $8\frac{1}{4}$ pounds of recyclable materials. Another class collects $1\frac{1}{2}$ times as many pounds as the first class. How many pounds of recyclable materials do the two classes collect altogether?

Review & Refresh

Find the product.

11. $6 \times 5.7 =$ _____

12. $0.84 \times 9 =$ _____

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Name _____

9.8 Compare Factors and Products

Learning Target: Compare a product to each of its factors.

Success Criteria:

- I can determine whether a number is less than, greater than, or equal to 1.
- I can compare a product to each of its factors.
- I can explain why a product is less than, greater than, or equal to each of its factors.

FLORIDA STANDARDS

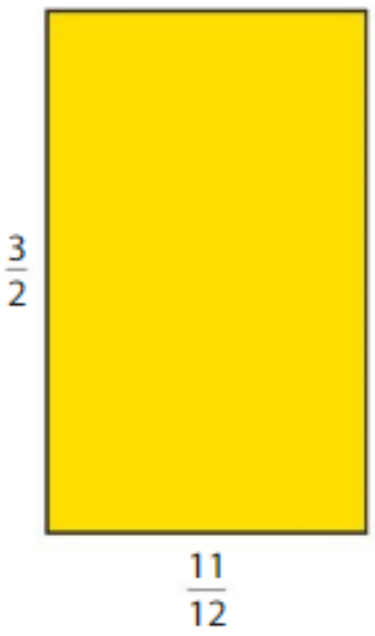
MAFS.5.NF.2.5a
MAFS.5.NF.2.5b

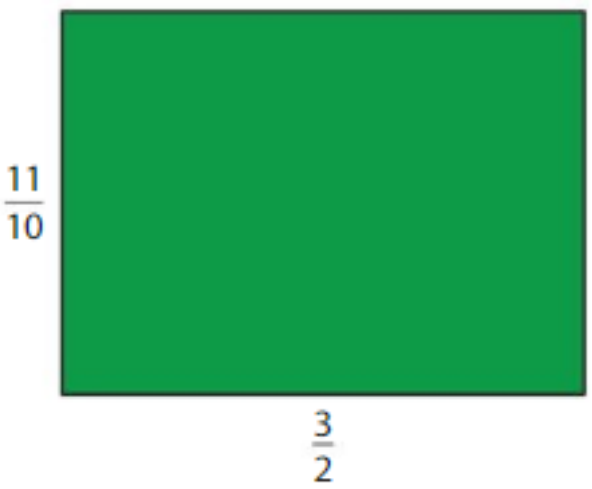
Explore and Grow

Without calculating, order the rectangles by area from least to greatest. Explain your reasoning.









MP **Construct Arguments** Explain your strategy to your partner. Compare your strategies.

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Think and Grow: Compare Factors and Products

Key Idea When you multiply a number by a fraction greater than 1, the product is greater than the number. When you multiply a number by a fraction less than 1, the product is less than the number.

Example Without calculating, tell whether the product $3\frac{1}{8} \times \frac{5}{6}$ is *less than*, *greater than*, or *equal to* each of its factors.

Because $3\frac{1}{8}$ ◯ 1, the product $3\frac{1}{8} \times \frac{5}{6}$ is _____ $\frac{5}{6}$.

Because $\frac{5}{6}$ ◯ 1, the product $3\frac{1}{8} \times \frac{5}{6}$ is _____ $3\frac{1}{8}$.

$\frac{5}{3} \times \frac{2}{2} = \frac{5 \times 2}{3 \times 2} = \frac{10}{6}$ shows you that $\frac{5}{3}$ and $\frac{10}{6}$ are equivalent. You can think of this as multiplying by 1.

$\frac{5}{3} \times \frac{2}{2} = \frac{5}{3} \times 1$

Example Without calculating, tell whether the product $\frac{5}{3} \times \frac{2}{2}$ is *less than*, *greater than*, or *equal to* each of its factors.

Because $\frac{5}{3}$ ◯ 1, the product $\frac{5}{3} \times \frac{2}{2}$ is _____ $\frac{2}{2}$.

Because $\frac{2}{2}$ ◯ 1, the product $\frac{5}{3} \times \frac{2}{2}$ is _____ $\frac{5}{3}$.



Show and Grow

Without calculating, tell whether the product is *less than*, *greater than*, or *equal to* each of its factors.

1. $8 \times \frac{3}{10}$

2. $\frac{4}{4} \times 5\frac{2}{3}$

3. $\frac{4}{3} \times \frac{1}{6}$

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Name _____

Apply and Grow: Practice

Without calculating, tell whether the product is *less than*, *greater than*, or *equal to* each of its factors.

4. $\frac{1}{4} \times \frac{1}{12}$

5. $3\frac{4}{5} \times 6\frac{7}{8}$

6. $\frac{1}{6} \times \frac{10}{10}$

7. $\frac{2}{3} \times 5$

8. $\frac{7}{10} \times 4\frac{8}{9}$

9. $\frac{9}{2} \times 1\frac{3}{4}$

Without calculating, order the products from least to greatest.

10. $\frac{5}{6} \times 1\frac{8}{9}$ $\frac{5}{6} \times \frac{1}{3}$ $\frac{5}{6} \times \frac{7}{7}$

11. $\frac{1}{6} \times \frac{1}{4}$ $\frac{1}{10} \times \frac{1}{4}$ $5\frac{7}{10} \times \frac{1}{4}$

12. **YOU BE THE TEACHER** Your friend says that $\frac{1}{2} \times 8$ is half as much as 8. Is your friend correct? Explain.

13. **DIG DEEPER!** Without calculating, tell whether the product is *less than*, *greater than*, or *equal to* $3\frac{3}{4}$. Explain.

$$\left(\frac{1}{2} \times 3\frac{3}{4}\right) \times \frac{2}{7}$$

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Think and Grow: Modeling Real Life



Shot put is a track and field throwing event that uses a heavy metal ball called a shot.

Example Men's shot put competitions use a shot with a mass of $7\frac{1}{4}$ kilograms. The mass of a bowling ball is $\frac{7}{8}$ as much as the mass of the shot. Is the mass of the bowling ball less than, greater than, or equal to the mass of the shot?

Write an expression to represent the mass of the bowling ball.

The mass of the bowling ball is $\frac{7}{8}$ as much as the mass of the shot, so multiply the mass of the shot by $\frac{7}{8}$.

$7\frac{1}{4} \times \frac{7}{8}$

You can also say that the mass of the shot is $\frac{8}{7}$ times as much as the mass of the bowling ball.



Use the factor $\frac{7}{8}$ to compare the masses.

Because $\frac{7}{8}$ ◯ 1, the product $7\frac{1}{4} \times \frac{7}{8}$ is _____ $7\frac{1}{4}$.

So, the mass of the bowling ball is _____ the mass of the shot.

Show and Grow

14. You practice playing the keyboard for $3\frac{1}{2}$ hours. Your friend practices playing the keyboard for $\frac{5}{4}$ as many hours as you. Does your friend practice for fewer hours, more hours, or the same number of hours as you?

15. The original price of a telescope is $99. The sale price is $\frac{4}{5}$ of the original price. An astrologist buys the telescope at its sale price and uses a half-off coupon. What fraction of the original price does the astrologist pay for the telescope?



16. **DIG DEEPER!** The Abraj Al-Bait Clock Tower is $\frac{6}{10}$ kilometer tall. Zifeng Tower is $\frac{3}{4}$ as tall as the clock tower. Is Zifeng Tower shorter than, taller than, or the same height as the Abraj Al-Bait Clock Tower? What is the height of each tower in meters?

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Name _____

Homework & Practice 9.8

Learning Target: Compare a product to each of its factors.

Example Without calculating, tell whether the product $\frac{1}{3} \times \frac{6}{7}$ is *less than*, *greater than*, or *equal to* each of its factors.

Because $\frac{1}{3}$ $<$ 1, the product $\frac{1}{3} \times \frac{6}{7}$ is less than $\frac{6}{7}$.

Because $\frac{6}{7}$ $<$ 1, the product $\frac{1}{3} \times \frac{6}{7}$ is less than $\frac{1}{3}$.

Without calculating, tell whether the product is *less than*, *greater than*, or *equal to* each of its factors.

1. $1\frac{3}{4} \times 6$

2. $\frac{5}{12} \times \frac{1}{6}$

3. $\frac{2}{7} \times \frac{5}{5}$

4. $3\frac{4}{5} \times 2\frac{9}{10}$

5. $8 \times \frac{2}{3}$

6. $1\frac{7}{8} \times \frac{1}{4}$

Without calculating, order the products from least to greatest.

7. $\frac{1}{3} \times \frac{4}{5}$ $\quad \frac{1}{3} \times \frac{6}{6}$ $\quad \frac{1}{3} \times 8\frac{2}{9}$

8. $2\frac{1}{2} \times \frac{3}{5}$ $\quad 4 \times \frac{3}{5}$ $\quad \frac{1}{12} \times \frac{3}{5}$

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9. MP **Logic** Without calculating, use $>$, $<$, or $=$ to make the statement true. Explain.

$$3\frac{1}{3} \times \frac{1}{6} \bigcirc 3\frac{1}{2}$$

10. MP **Logic** Without calculating, determine which number makes the statement true.

$\_\_\_\_ \times 1\frac{7}{8}$ is greater than $1\frac{7}{8}$.

1	$\frac{1}{2}$	$1\frac{4}{5}$

11. MP **Reasoning** Why does multiplying by a fraction greater than one result in a product greater than the original number?

12. **Modeling Real Life** You snowboard $1\frac{7}{8}$ miles. Your friend snowboards $3\frac{2}{3}$ times as far as you. Does your friend snowboard fewer miles, more miles, or the same number of miles as you?

13. **Modeling Real Life** A pet owner has three dogs. The youngest dog weighs $\frac{1}{4}$ as much as the second oldest dog. The oldest dog weighs $1\frac{1}{4}$ as much as the second oldest. The second oldest weighs 20 pounds. Which dog weighs the most? the least?



Review & Refresh

Compare.

14. 40.5 $\bigcirc$ 40.13

15. 13.90 $\bigcirc$ 13.9

16. 32.006 $\bigcirc$ 32.06

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Name _____

Performance Task 9

1. You see a rock formation at a national park. The formation has layers that formed millions of years ago when particles settled in water and became rock. You make a model of the rock formation using $\frac{3}{16}$-inch foam sheets.



Type	Number of Foam Sheets	Height of Model (inches)
Topsoil		
Limestone	12	
Sandstone	8	
Shale	20	
Granite		3

a. The three types of sedimentary rocks are limestone, sandstone, and shale. Use the number of foam sheets to find the height of each sedimentary rock layer.

b. What is the combined height of the sedimentary rock layers?

c. Will you use more foam sheets for the granite layers or the shale layers? Explain.

d. The height of the topsoil layer is $1\frac{1}{4}$ times the height of the sandstone layer. How many foam sheets do you use in the topsoil layer?

e. On your model, 1 inch represents 40 feet. What is the actual height of the rock formation?

f. Why do you think the rock formation has layers?

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Fraction Connection: Multiplication

Directions:

1. Players take turns rolling three dice.
2. On your turn, evaluate the expression indicated by your roll and cover the answer.
3. The first player to get four in a row, horizontally, vertically, or diagonally, wins!

Roll	Evaluate
3	$4 \times \frac{3}{8}$
4	$\frac{1}{2} \times \frac{7}{9}$
5	$\frac{3}{5} \times 9$
6	$2\frac{1}{4} \times 1\frac{2}{3}$
7	$7 \times \frac{2}{5}$
8	$\frac{7}{8} \times \frac{2}{3}$
9	$\frac{5}{6} \times 8$
10	$3\frac{1}{2} \times 2\frac{3}{4}$

Roll	Evaluate
11	$6 \times \frac{3}{7}$
12	$\frac{4}{5} \times \frac{3}{4}$
13	$\frac{7}{12} \times 4$
14	$1\frac{2}{7} \times 2\frac{2}{5}$
15	$5 \times \frac{1}{4}$
16	$\frac{9}{10} \times \frac{4}{5}$
17	$\frac{2}{9} \times 3$
18	$2\frac{3}{4} \times 3\frac{2}{3}$

$6\frac{2}{3}$	$2\frac{4}{7}$	$\frac{18}{25}$	$3\frac{3}{4}$
$3\frac{3}{35}$	$1\frac{1}{2}$	$9\frac{5}{8}$	$\frac{2}{3}$
$2\frac{4}{5}$	$\frac{3}{5}$	$2\frac{1}{3}$	$\frac{7}{18}$
$5\frac{2}{5}$	$10\frac{1}{2}$	$\frac{7}{12}$	$1\frac{1}{4}$



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Name _____

Chapter Practice 9

9.1 Multiply Whole Numbers by Fractions

Multiply.

1. $5 \times \frac{1}{2} = \_\_\_\_$

2. $2 \times \frac{7}{10} = \_\_\_\_$

3. $9 \times \frac{5}{8} = \_\_\_\_$

4. $6 \times \frac{71}{100} = \_\_\_\_$

5. $4 \times \frac{8}{5} = \_\_\_\_$

6. $7 \times \frac{5}{3} = \_\_\_\_$

9.2 Use Models to Multiply Fractions by Whole Numbers

Multiply. Use a model to help.

7. $\frac{2}{5}$ of 20

8. $\frac{1}{6} \times 12$

9. $\frac{1}{3} \times 6$

10. $\frac{5}{16}$ of 8

11. **Modeling Real Life** You have 24 apples. You use $\frac{1}{4}$ of them to make a single serving of applesauce. How many apples do you *not* use?



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9.3 Multiply Fractions and Whole Numbers

Multiply.

12. $\frac{3}{5} \times 15 =$ _____

13. $\frac{9}{10} \times 30 =$ _____

14. $48 \times \frac{3}{4} =$ _____

15. $11 \times \frac{5}{9} =$ _____

16. $\frac{1}{6} \times 19 =$ _____

17. $7 \times \frac{13}{50} =$ _____

9.4 Use Models to Multiply Fractions

Multiply. Use a model to help.

18. $\frac{1}{2} \times \frac{1}{10} =$ _____

19. $\frac{1}{5} \times \frac{1}{9} =$ _____

20. $\frac{1}{6} \times \frac{1}{7} =$ _____

21. $\frac{1}{3} \times \frac{1}{8} =$ _____

22. $\frac{2}{5} \times \frac{1}{3} =$ _____

23. $\frac{2}{3} \times \frac{3}{5} =$ _____

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9.5 Multiply Fractions

Evaluate.

24. $\frac{1}{3} \times \frac{1}{8} =$ _____

25. $\frac{5}{6} \times \frac{1}{4} =$ _____

26. $\frac{7}{2} \times \frac{2}{5} =$ _____

27. $\frac{9}{10} \times \frac{3}{7} =$ _____

28. $\frac{4}{5} \times \frac{13}{100} =$ _____

29. $\frac{11}{25} \times \frac{3}{4} =$ _____

30. $9 \times \left(\frac{2}{9} \times \frac{1}{2}\right) =$ _____

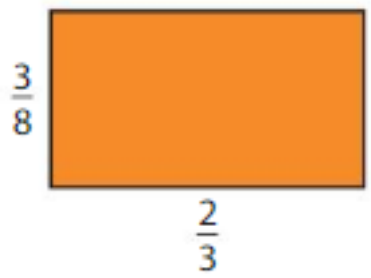
31. $\left(\frac{1}{10} + \frac{7}{10}\right) \times \frac{3}{4} =$ _____

32. $\frac{4}{7} \times \left(\frac{5}{8} - \frac{1}{4}\right) =$ _____

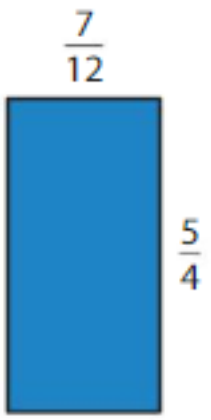
9.6 Find Areas of Rectangles

Use rectangles with unit fraction side lengths to find the area of the rectangle.

33.



34.



35. Find the area of a rectangle with side lengths of $\frac{2}{9}$ and $\frac{1}{10}$.

36. Find the area of a square with a side length of $\frac{3}{4}$.

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9.7 Multiply Mixed Numbers

Multiply.

37. $1\frac{1}{4} \times 2\frac{1}{4} =$ _____

38. $3\frac{4}{5} \times 1\frac{1}{2} =$ _____

39. $5\frac{1}{3} \times 4\frac{7}{8} =$ _____

40. $4\frac{5}{6} \times 2\frac{9}{10} \times \frac{1}{8} =$ _____

41. MP **Logic** Find the missing numbers.

$$4\frac{1}{\square} \times 2\frac{1}{5} = 9\frac{\square}{10}$$

9.8 Compare Factors and Products

Without calculating, tell whether the product is *less than*, *greater than*, or *equal to* each of its factors.

42. $1\frac{1}{2} \times 3$

43. $\frac{1}{8} \times \frac{1}{6}$

44. $\frac{5}{5} \times 2\frac{4}{7}$

45. $\frac{3}{4} \times 2\frac{11}{12}$

46. $3\frac{1}{9} \times 2\frac{7}{8}$

47. $\frac{9}{8} \times \frac{5}{2}$

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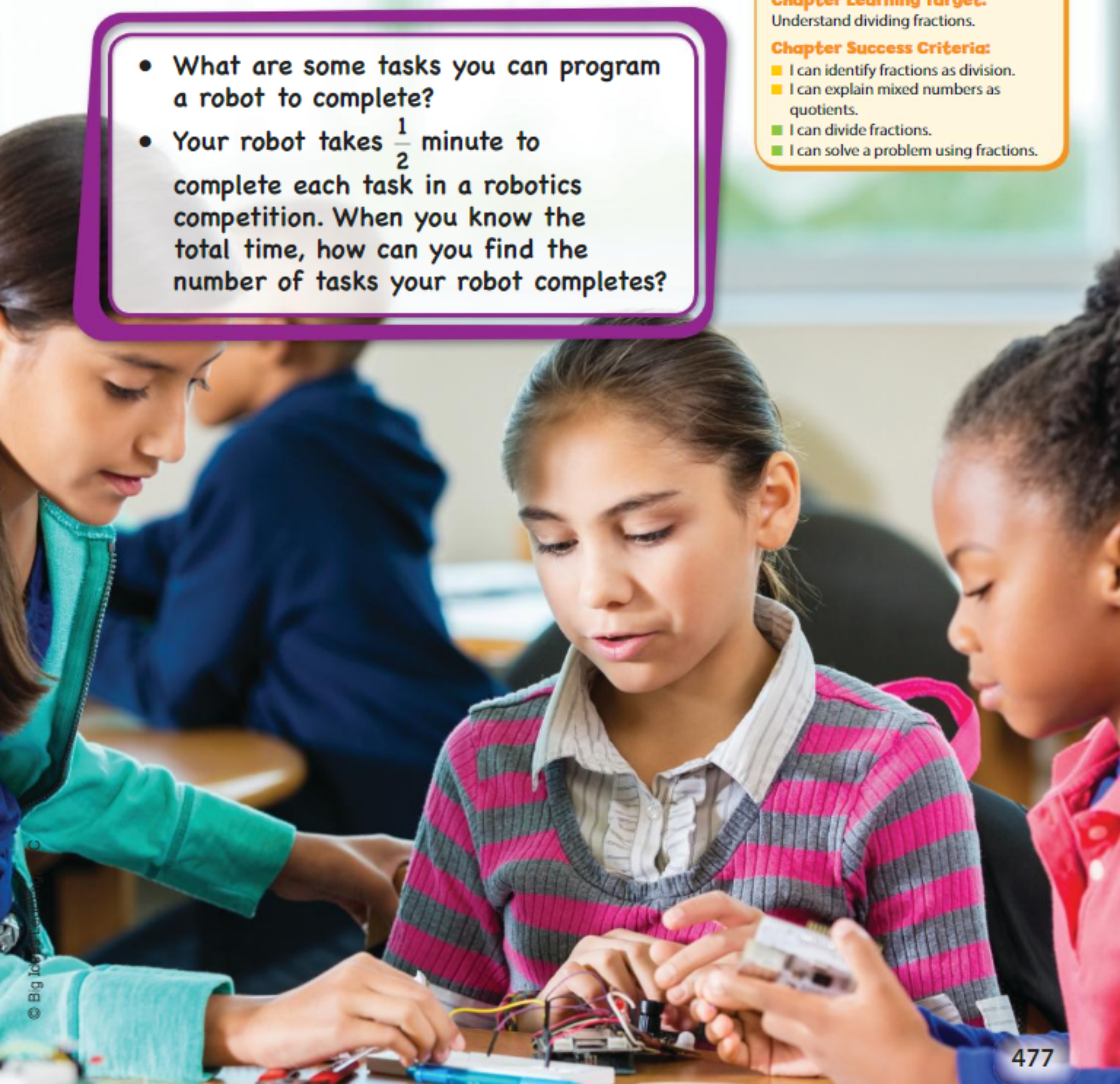
10 Divide Fractions

- What are some tasks you can program a robot to complete?
- Your robot takes $\frac{1}{2}$ minute to complete each task in a robotics competition. When you know the total time, how can you find the number of tasks your robot completes?

Chapter Learning Target:
Understand dividing fractions.

Chapter Success Criteria:
- I can identify fractions as division.
- I can explain mixed numbers as quotients.
- I can divide fractions.
- I can solve a problem using fractions.



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Name _____

10 Vocabulary

Review Words

addition
division
inverse operations
multiplication
proper fraction
subtraction

Organize It

Use the review words to complete the graphic organizer. Then evaluate the expression.

_____

Operations that "undo" each other

_____ _____

$2 + 7 = 9$ ⟷ $9 - 7 = 2$

_____ _____

$4 \times 3 = 12$ ⟷ $12 \div 3 = 4$

Define It

What am I?

A fraction less than 1

$48 \div 8 = A$ $810 \div 9 = N$ $20 \div 4 = F$ $18 \div 9 = O$

$15 \div 5 = T$ $240 \div 3 = C$ $80 \div 4 = I$ $70 \div 7 = R$

$42 \div 6 = P$ $300 \div 5 = E$

7	10	2	7	60	10

5	10	6	80	3	20	2	90

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Name _____

Interpret Fractions as Division 10.1

Learning Target: Understand how fractions relate to division.

Success Criteria:

- I can use a model to divide two whole numbers that have a fraction as the quotient.
- I can use an equation to divide two whole numbers that have a fraction as the quotient.
- I can interpret a fraction as division.

FLORIDA STANDARDS
MAFS.5.NF.2.3

Explore and Grow

You share 4 sheets of construction paper equally among 8 people. Write a division expression that represents the situation.

What fraction of a sheet of paper does each person get? Use a model to support your answer.

MP **Structure** How can you check your answer using multiplication?

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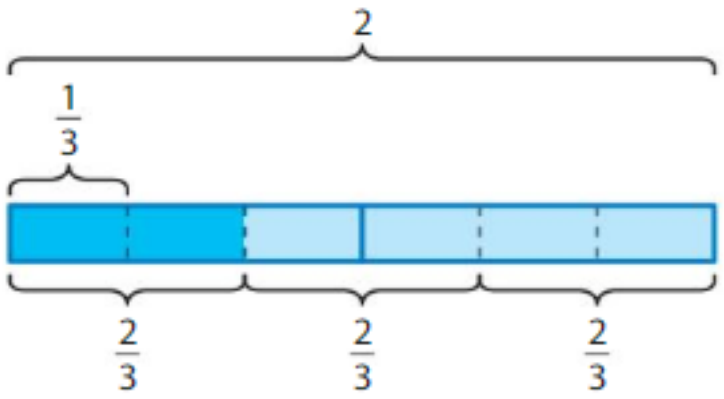
Think and Grow: Divide Whole Numbers

You can use models to divide whole numbers that have a fraction as the quotient.

Example Find $2 \div 3$.

One Way: Use a tape diagram. Show 2 wholes. Divide each whole into 3 equal parts.



Check:

$3 \times \frac{2}{3} = 2$ ✓

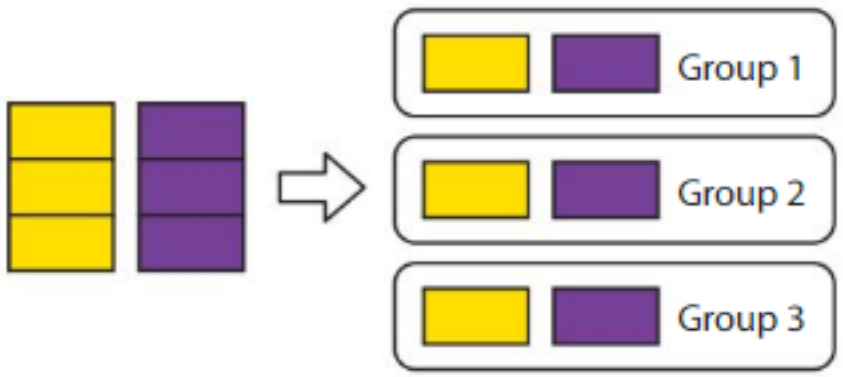


When you divide 2 wholes into 3 equal parts,

each part is $\frac{\square}{\square}$ of a whole.

So, $2 \div 3 = \frac{\square}{\square}$.

Another Way: Use an area model. Show 2 wholes. Divide each whole into 3 equal parts. Then separate the parts into 3 equal groups.



There are 2 wholes. Each group gets $\frac{\square}{\square}$ of each whole.

So, $2 \div 3 = 2 \times \frac{1}{3} = \frac{\square}{\square}$.

Show and Grow

Divide. Use a model to help.

1. $2 \div 4 =$ _____

2. $1 \div 3 =$ _____

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Name _____

Apply and Grow: Practice

Divide. Use a model to help.

3. $1 \div 8 =$ _____

4. $1 \div 4 =$ _____

5. $2 \div 6 =$ _____

6. $2 \div 5 =$ _____

7. $3 \div 7 =$ _____

8. $5 \div 6 =$ _____

9. How many 6s are in 1?

10. How many 10s are in 9?

11. MP **Number Sense** For which equations does $k = 8$?

$3 \div k = \frac{3}{8}$

$k \div 9 = \frac{8}{9}$

$2 \div 16 = k$

$8 \div k = \frac{8}{15}$

12. **Writing** Write and solve a real-life problem for $7 \div 12$.

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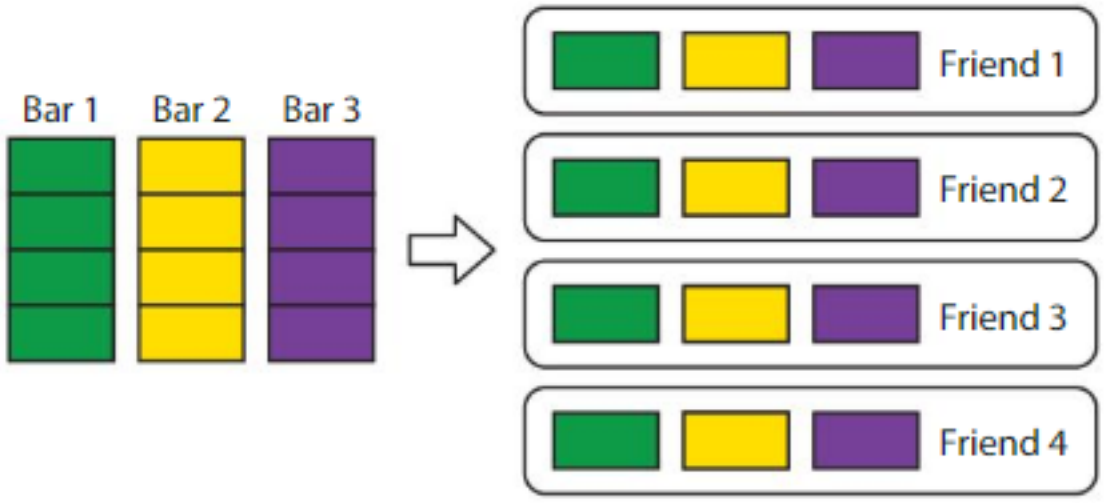
Think and Grow: Modeling Real Life



Example Three fruit bars are shared equally among 4 friends. What fraction of a fruit bar does each friend get?

Divide 3 by 4 to find what fraction of a fruit bar each friend gets.

Use an area model to find $3 \div 4$. Show 3 whole fruit bars. Divide each fruit bar into 4 equal parts. Then separate the parts into 4 equal groups.



You can interpret a fraction as division of the numerator by the denominator.

$$\frac{a}{b} = a \div b$$



There are 3 whole fruit bars. Each friend gets $\frac{\square}{\square}$ of each fruit bar.

$3 \div 4 = 3 \times \frac{1}{4} = \frac{\square}{\square}$

So, each friend gets $\frac{\square}{\square}$ of a fruit bar.

Show and Grow

13. Four circular lemon slices are shared equally among 8 glasses of water. What fraction of a lemon slice does each glass get?



14. You cut a 5-foot streamer into 6 pieces of equal size. What is the length of each piece in feet? in inches?

15. **DIG DEEPER!** A fruit drink is made using $\frac{7}{4}$ quarts of orange juice and $\frac{5}{4}$ quarts of pineapple juice. The drink is shared equally among 12 guests. What fraction of a quart does each guest get?

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Name _____

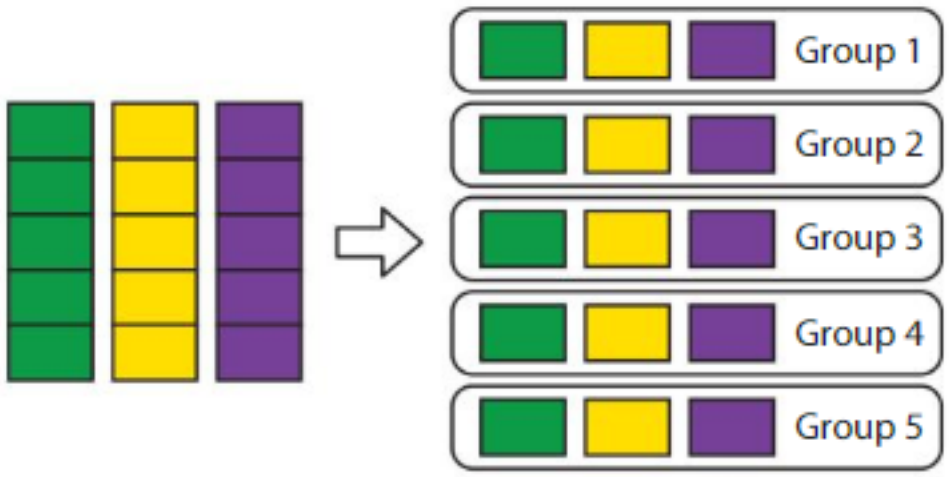
Homework & Practice 10.1

Learning Target: Understand how fractions relate to division.

Example Find $3 \div 5$.

Use an area model. Show 3 wholes. Divide each whole into 5 equal parts.

Then separate the parts into 5 equal groups.



You can interpret a fraction as division of the numerator by the denominator.

$$\frac{a}{b} = a \div b$$



There are 3 wholes. Each group gets $\frac{\boxed{1}}{\boxed{5}}$ of each whole.

So, $3 \div 5 = 3 \times \frac{1}{5} = \frac{\boxed{3}}{\boxed{5}}$.

Divide. Use a model to help.

1. $1 \div 6 =$ _____

2. $1 \div 7 =$ _____

3. $1 \div 5 =$ _____

4. $3 \div 4 =$ _____

5. $6 \div 7 =$ _____

6. $5 \div 9 =$ _____

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7. **YOU BE THE TEACHER** Your friend says $\frac{5}{12}$ is equivalent to $12 \div 5$. Is your friend correct? Explain.

8. **Writing** Explain how fractions and division are related.

9. **Structure** Write a division equation represented by the model.



10. **Number Sense** Eight friends share multiple vegetable pizzas, and each gets $\frac{3}{8}$ of a pizza. How many pizzas do they share?

11. **Modeling Real Life** Seven friends each run an equal part of a 5-kilometer relay race. What fraction of a kilometer does each friend complete?

12. **Modeling Real Life** A group of friends equally share 3 bags of pretzels. Each friend gets $\frac{3}{5}$ of a bag of pretzels. How many friends are in the group?

Review & Refresh

Multiply.

13. $9 \times \frac{2}{3} =$ _____

14. $5 \times \frac{7}{10} =$ _____

15. $3 \times \frac{5}{12} =$ _____

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Name _____

Mixed Numbers as Quotients

10.2

Learning Target: Understand how mixed numbers relate to division.

Success Criteria:

- I can use a model to divide two whole numbers that have a mixed number as the quotient.
- I can use an equation to divide two whole numbers that have a mixed number as the quotient.
- I can write and solve a real-life problem involving division of whole numbers.

FLORIDA STANDARDS
MAFS.5.NF.2.3

Explore and Grow

You share 6 sheets of construction paper equally among 4 people. Write a division expression that represents the situation.

How much paper does each person get? Use a model to support your answer.

MP **Precision** Does each person get less than or more than 1 sheet of paper? Use the dividend and divisor to explain why your answer makes sense.

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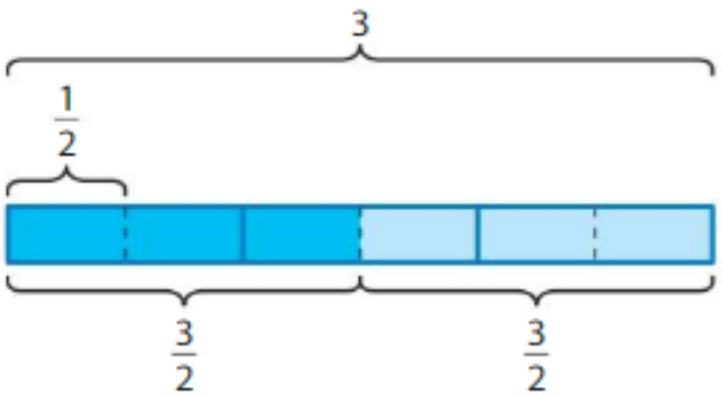
Think and Grow: Divide Whole Numbers

You can use models to divide whole numbers that have a mixed number as the quotient.

Example Find $2 \div 3$.

One Way: Use a tape diagram. Show 3 wholes. Divide each whole into 2 equal parts.

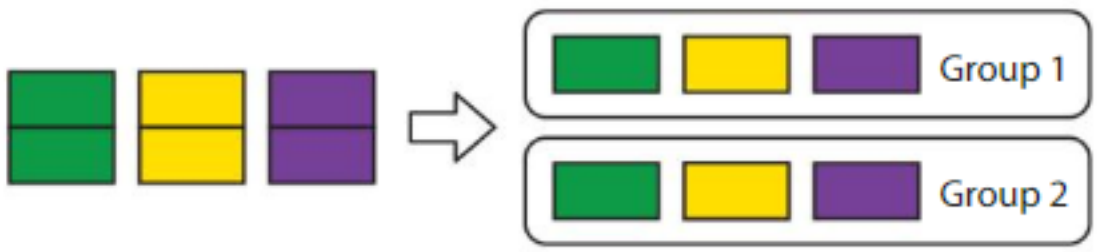




When you divide 3 wholes into 2 equal parts,

each part is $\frac{\square}{\square}$ of a whole. So, $3 \div 2 = \frac{\square}{\square}$ or $\square\frac{\square}{\square}$.

Another Way: Use an area model. Show 3 wholes. Divide each whole into 2 equal parts. Then separate the parts into 2 equal groups.



There are 3 wholes. Each group gets $\frac{\square}{\square}$ of each whole.

So, $3 \div 2 = 3 \times \frac{1}{2} = \frac{\square}{\square}$, or $\square\frac{\square}{\square}$.

Show and Grow

Divide. Use a model to help.

1. $5 \div 3 =$ _____

2. $7 \div 2 =$ _____

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Name _____

Apply and Grow: Practice

Divide. Use a model to help.

3. $12 \div 7 =$ _____

4. $25 \div 20 =$ _____

5. $15 \div 4 =$ _____

6. $6 \div 13 =$ _____

7. $16 \div 8 =$ _____

8. $92 \div 50 =$ _____

9. How many 3s are in 7?

10. How many 6s are in 21?

11. **YOU BE THE TEACHER** Your friend says that $\frac{35}{6}$ is equivalent to $35 \div 6$. Is your friend correct? Explain.

12. **Writing** Write and solve a real-life problem for $24 \div 5$.

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Think and Grow: Modeling Real Life

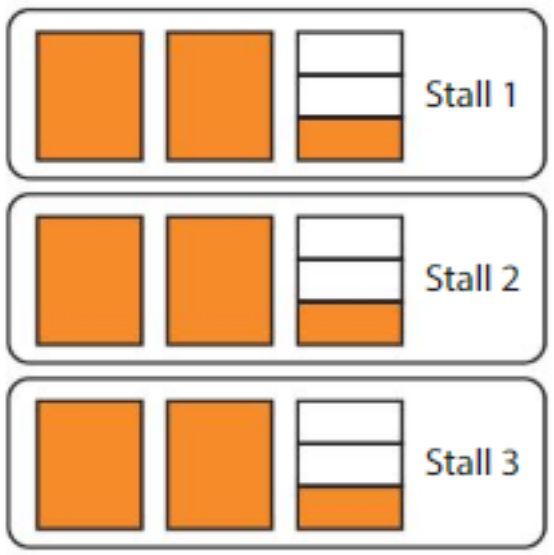


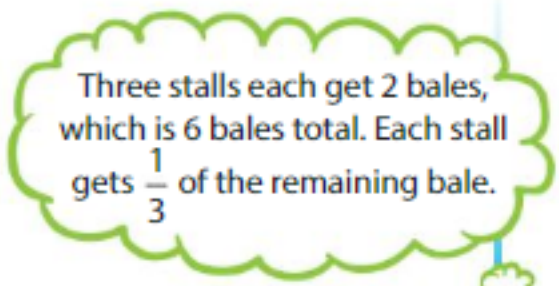
Example You share 7 bales of hay equally among 3 horse stalls. How many whole bales are in each stall? What fractional amount of a bale is in each stall?

Divide 7 by 3 to find how many bales of hay are in each stall. Use an area model to help.

$7 \div 3 = \frac{\square}{\square}$

$= \square\frac{\square}{\square}$







Interpret each part of the quotient.

Whole number part: _____ There are _____ whole bales in each stall.

Fractional part: _____ There is _____ of a bale in each stall.

So, there are _____ whole bales and _____ of a bale in each stall.

Show and Grow

13. Six muffins are shared equally among 4 friends. How many whole muffins does each friend get? What fractional amount of a muffin does each friend get?

14. A cyclist bikes 44 miles in 5 days. She bikes the same distance each day. Does she bike more than $8\frac{1}{2}$ miles each day? Explain.

15. **DIG DEEPER!** At Table A, 4 students share 7 packs of clay equally. At Table B, 5 students share 8 packs of clay equally. At which table does each student get a greater amount of clay? Explain.



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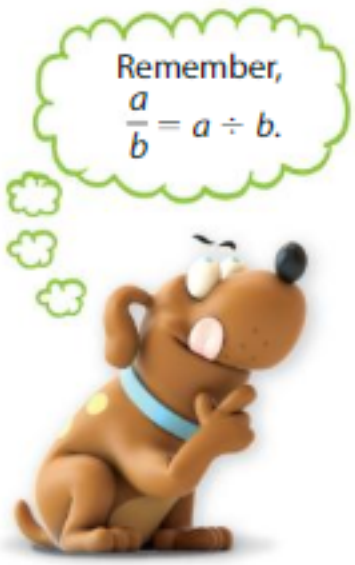
Name _____

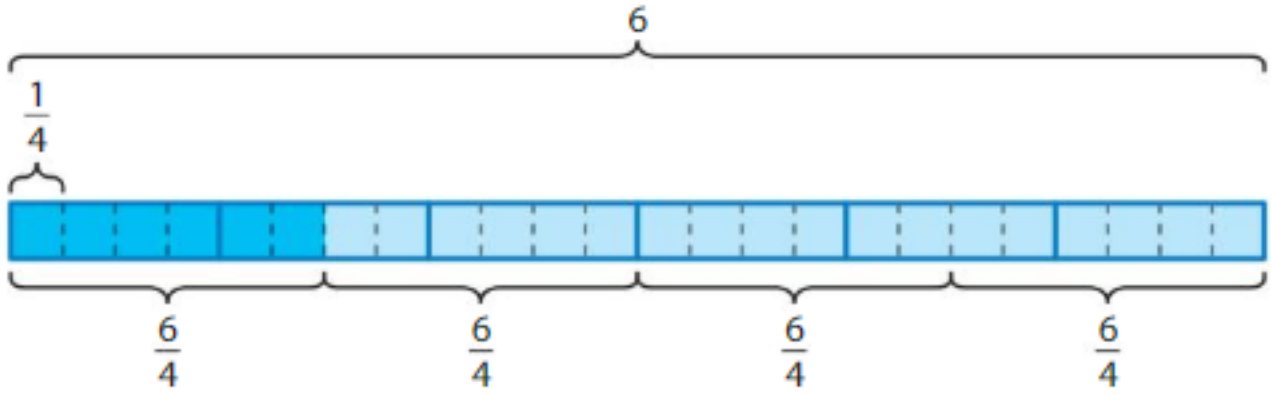
Homework & Practice 10.2

Learning Target: Understand how mixed numbers relate to division.

Example Find $6 \div 4$.

Use a tape diagram. Show 6 wholes. Divide each whole into 4 equal parts.





When you divide 6 wholes into 4 equal parts, each part is $\frac{6}{4}$ of a whole.

So, $6 \div 4 = \frac{6}{4}$, or $1\frac{1}{2}$.

Divide. Use a model to help.

1. $5 \div 2 =$ _____

2. $10 \div 7 =$ _____

3. $3 \div 9 =$ _____

4. $11 \div 4 =$ _____

5. $13 \div 6 =$ _____

6. $45 \div 8 =$ _____

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7. **Number Sense** Between which two whole numbers is the quotient of 74 and 9?

8. **Reasoning** Three friends want to share 22 baseball cards. For this situation, why does the quotient 7 R1 make more sense than the quotient $7\frac{1}{3}$?

9. **DIG DEEPER!** Is $\frac{2}{5} \times 3$ equivalent to $2 \times 3 \div 5$? Explain.

10. **Modeling Real Life** A bag of 4 balls weighs 6 pounds. Each ball weighs the same amount. What is the weight of each ball?

11. **Modeling Real Life** Zookeepers order 600 pounds of bamboo for the pandas. The bamboo lasts 7 days. How many whole pounds of bamboo do the pandas eat each day? What fractional amount of a pound do the pandas eat each day?



12. **Modeling Real Life** A plumber has 20 feet of piping. He cuts the piping into 6 equal pieces. Is each piece greater than, less than, or equal to $3\frac{1}{2}$ feet?

Review & Refresh

Add.

13. $\frac{2}{9} + \frac{2}{3} =$ _____

14. $\frac{1}{10} + \frac{3}{4} =$ _____

15. $\frac{3}{5} + \frac{5}{6} + \frac{1}{5} =$ _____

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Name _____

Divide Whole Numbers by Unit Fractions

10.3

Learning Target: Divide whole numbers by unit fractions.

Success Criteria:

- I can use a model to divide a whole number by a unit fraction.
- I can use an equation to divide a whole number by a unit fraction.
- I can write and solve a real-life problem involving division of a whole number and a unit fraction.

FLORIDA STANDARDS

MAFS.5.NF.2.7b
MAFS.5.NF.2.7c

Explore and Grow

Write a real-life problem that can be represented by $6 \div \frac{1}{2}$.

What is the solution to the problem? Use a model to support your answer.

MP **Structure** How can you check your answer using multiplication?

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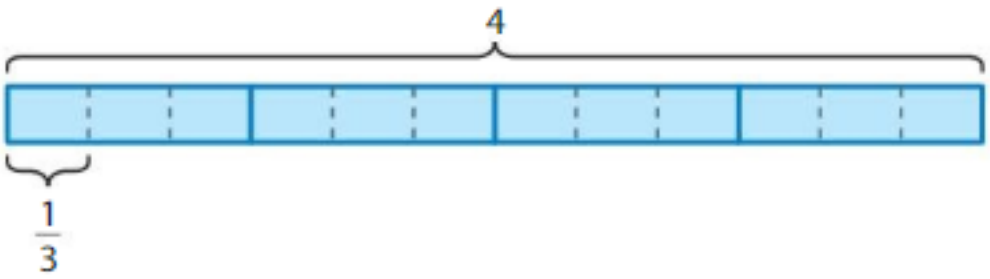
Think and Grow: Divide Whole Numbers by Unit Fractions

You can use models to divide whole numbers by unit fractions.

Example Find $4 \div \frac{1}{3}$.

One Way: Use a tape diagram to find how many $\frac{1}{3}$s are in 4. There are 4 wholes.

Divide each whole into 3 equal parts. Each part is $\frac{1}{3}$.



Check: $4 \div \frac{1}{3} = 12$ because $\frac{1}{3} \times 12 = 4$. ✓



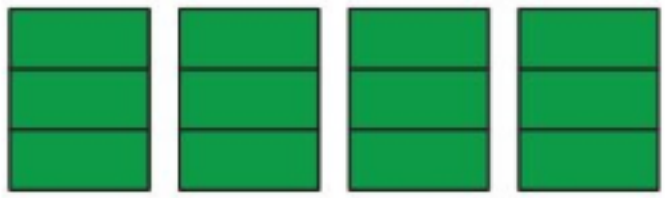
Because there are 3 one-thirds in 1 whole, there are

$4 \times$ _____ = _____ one-thirds in 4 wholes.

So, $4 \div \frac{1}{3} =$ _____.

Another Way: Use an area model to find how many $\frac{1}{3}$s are in 4.

There are 4 wholes. Divide each whole into 3 equal parts. Each part is $\frac{1}{3}$.



Because there are 3 one-thirds in 1 whole, there are

$4 \times$ _____ = _____ one-thirds in 4 wholes.

So, $4 \div \frac{1}{3} =$ _____.

Show and Grow

Divide. Use a model to help.

1. $3 \div \frac{1}{2} =$ _____

2. $2 \div \frac{1}{5} =$ _____

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Name _____

Apply and Grow: Practice

Divide. Use a model to help.

3. $1 \div \frac{1}{3} =$ _____

4. $3 \div \frac{1}{5} =$ _____

5. $5 \div \frac{1}{3} =$ _____

6. $4 \div \frac{1}{4} =$ _____

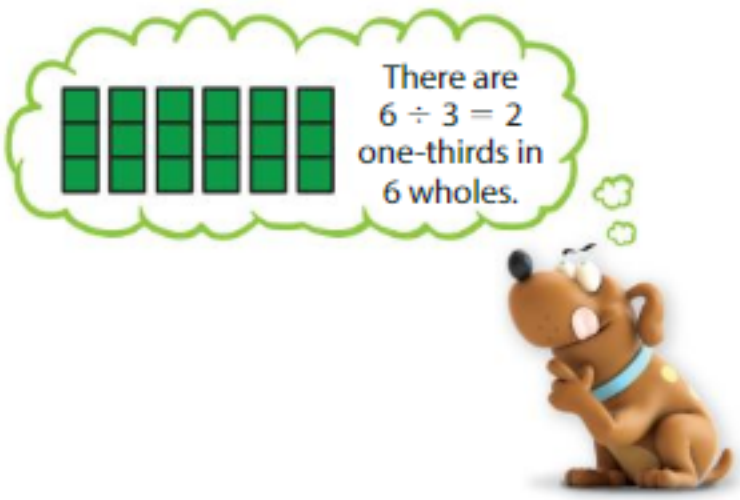
7. $7 \div \frac{1}{2} =$ _____

8. $2 \div \frac{1}{7} =$ _____

9. How many $\frac{1}{4}$s are in 5?

10. How many $\frac{1}{6}$s are in 2?

11. **YOU BE THE TEACHER** Newton finds $6 \div \frac{1}{3}$. Is he correct? Explain.



12. **Writing** Write and solve a real-life problem for $4 \div \frac{1}{2}$.

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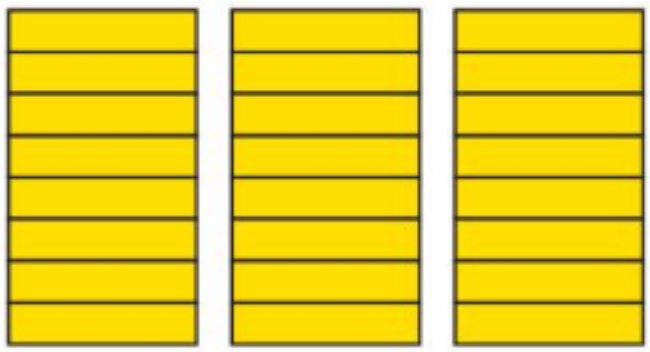
Think and Grow: Modeling Real Life



Example A chef makes 3 cups of salsa. A serving of salsa is $\frac{1}{8}$ cup. How many servings does the chef make?

To find the number of servings, find the number of $\frac{1}{8}$ cups in 3 cups.

Use an area model to find $3 \div \frac{1}{8}$. Divide each cup into 8 equal parts.



Notice that dividing a whole number by a unit fraction is the same as multiplying the whole number by the demoninator.

$$a \div \frac{1}{b} = a \times b$$



Because there are 8 one-eighth-cup servings in 1 cup,

there are 3 × _____ = _____ one-eighth-cup servings in 3 cups.

So, the chef makes _____ $\frac{1}{8}$-cup servings.

Show and Grow

13. A litter of kittens weighs a total of 2 pounds. Each newborn kitten weighs $\frac{1}{4}$ pound. How many kittens are in the litter?



14. You put signs on a walking trail that is 7 miles long. You put a sign at the start and at the end of the trail. You also put a sign every $\frac{1}{10}$ mile. How many signs do you put on the trail?

15. **DIG DEEPER!** You have 2 boards that are each 8 feet long. You cut $\frac{1}{2}$-foot pieces to make square picture frames. How many picture frames can you make?

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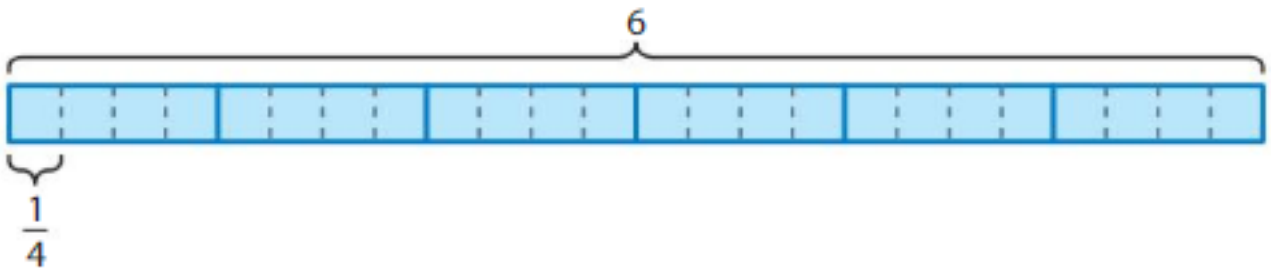
Name _____

Homework & Practice 10.3

Learning Target: Divide whole numbers by unit fractions.

Example Find $6 \div \frac{1}{4}$.

One Way: Use a tape diagram to find how many $\frac{1}{4}$s are in 6. There are 6 wholes. Divide each whole into 4 equal parts. Each part is $\frac{1}{4}$.



Because there are 4 one-fourths in 1 whole, there are

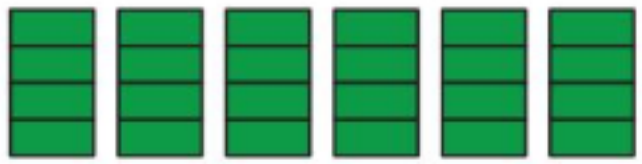
$6 \times$ 4 = 24 one-fourths in 6 wholes.

So, $6 \div \frac{1}{4} =$ 24 .

Another Way: Use an area model to find how many $\frac{1}{4}$s are in 6.

There are 6 wholes. Divide each whole into 4 equal parts.

Each part is $\frac{1}{4}$.



Because there are 4 one-fourths in 1 whole, there are

$6 \times$ 4 = 24 one-fourths in 6 wholes.

So, $6 \div \frac{1}{4} =$ 24 .

Divide. Use a model to help.

1. $1 \div \frac{1}{9} =$ _____

2. $2 \div \frac{1}{3} =$ _____

3. $5 \div \frac{1}{2} =$ _____

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Divide. Use a model to help.

4. $9 \div \frac{1}{4} =$ _____

5. $7 \div \frac{1}{3} =$ _____

6. $8 \div \frac{1}{5} =$ _____

7. MP **Number Sense** Explain how you can check your answer for Exercise 6.

8. **YOU BE THE TEACHER** Descartes finds $5 \div \frac{1}{4}$. Is he correct? Explain.

$$5 \div \frac{1}{4} = \frac{20}{4} \div \frac{1}{4} = 20$$

9. **Modeling Real Life** You need $\frac{1}{2}$ pound of clay to make a pinch pot. How many pinch pots can you make with 12 pounds of clay?



10. **Modeling Real Life** Your art teacher has 5 yards of yellow string and 4 yards of green string. She cuts both colors of string into $\frac{1}{3}$-yard pieces to hang student artwork. How many pieces of student artwork can she hang?

Review & Refresh

Multiply.

11. $\frac{2}{5} \times \frac{3}{4} =$ _____

12. $\frac{1}{8} \times \frac{5}{8} =$ _____

13. $\frac{4}{9} \times \frac{2}{7} =$ _____

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Name _____

Divide Unit Fractions by Whole Numbers

10.4

Learning Target: Divide unit fractions by whole numbers.

Success Criteria:

- I can use a model to divide a unit fraction by a whole number.
- I can use an equation to divide a unit fraction by a whole number.
- I can write and solve a real-life problem involving division of a unit fraction and a whole number.

FLORIDA STANDARDS

MAFS.5.NF.2.7a
MAFS.5.NF.2.7c

Explore and Grow

Write a real-life problem that can be represented by $\frac{1}{2} \div 3$.

What is the solution to the problem? Use a model to support your answer.

MP **Precision** Is the answer greater than or less than 1? Explain.

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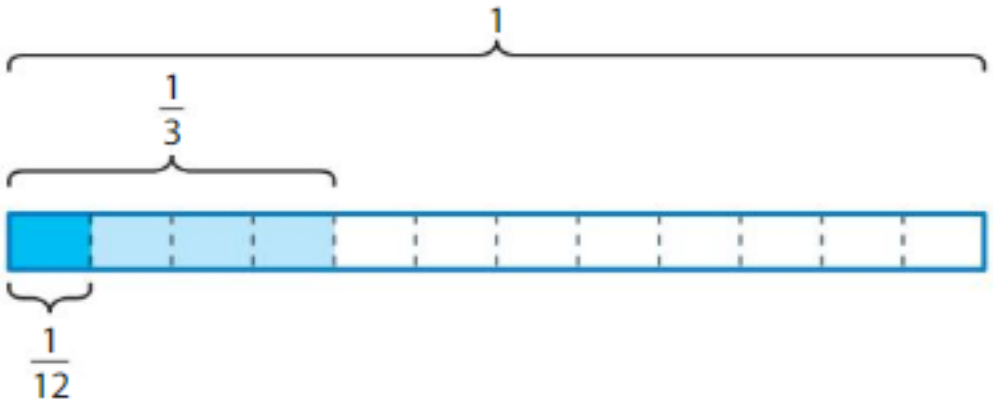
Think and Grow: Divide Unit Fractions by Whole Numbers

You can use models to divide unit fractions by whole numbers.

Example Find $\frac{1}{3} \div 4$.

One Way: Use a tape diagram. Divide $\frac{1}{3}$ into 4 equal parts.



Check: $\frac{1}{3} \div 4 = \frac{1}{12}$ because $4 \times \frac{1}{12} = \frac{1}{3}$. ✓

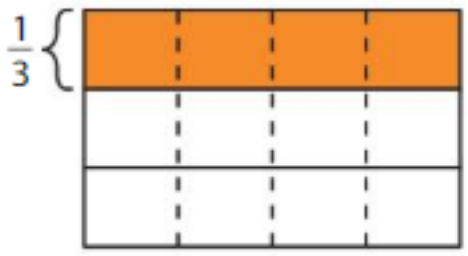


Each of the 4 equal parts of $\frac{1}{3}$ represents _____ of the whole.

So, $\frac{1}{3} \div 4 =$ _____.

Another Way: Use an area model to represent 1 whole.

Divide $\frac{1}{3}$ into 4 equal parts.



Dividing $\frac{1}{3}$ by 4 is the same as finding $\frac{1}{4}$ of $\frac{1}{3}$.

So, $\frac{1}{3} \div 4 = \frac{1}{3} \times \frac{1}{4} = \frac{1}{12}$.



Each of the 4 equal parts of $\frac{1}{3}$ represents _____ of the whole.

So, $\frac{1}{3} \div 4 =$ _____.

Show and Grow

Divide. Use a model to help.

1. $\frac{1}{4} \div 2 =$ _____

2. $\frac{1}{2} \div 5 =$ _____

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Name _____

Apply and Grow: Practice

Divide. Use a model to help.

3. $\frac{1}{5} \div 3 =$ _____

4. $\frac{1}{6} \div 2 =$ _____

5. $\frac{1}{3} \div 5 =$ _____

6. $\frac{1}{5} \div 4 =$ _____

7. $\frac{1}{3} \div 3 =$ _____

8. $\frac{1}{8} \div 2 =$ _____

9. How many 6s are in $\frac{1}{2}$?

10. How many 2s are in $\frac{1}{3}$?

11. **Writing** Write and solve a real-life problem for $\frac{1}{2} \div 7$.

12. MP **Reasoning** Complete the statements.

Dividing $\frac{1}{4}$ by 7 is the same as finding $\square$ of $\square$.

So, $\frac{1}{4} \div 7 = \square \times \square = \square$.

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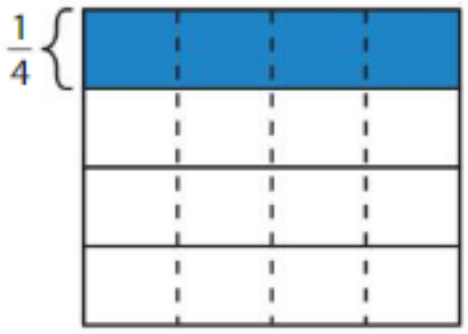
Think and Grow: Modeling Real Life

Example You melt $\frac{1}{4}$ quart of soap. You pour the soap into 4 of the same-sized molds. What fraction of a quart of soap does each mold hold?

You are dividing $\frac{1}{4}$ quart into 4 equal parts, so you need to find $\frac{1}{4} \div 4$.

Use an area model to find $\frac{1}{4} \div 4$. Divide $\frac{1}{4}$ quart into 4 equal parts.



Dividing by a number b is the same as multiplying by $\frac{1}{b}$.

So, $\frac{1}{a} \div b = \frac{1}{a} \times \frac{1}{b} = \frac{1}{a \times b}$.



Each of the 4 equal parts of $\frac{1}{4}$ represents _____ of the whole.

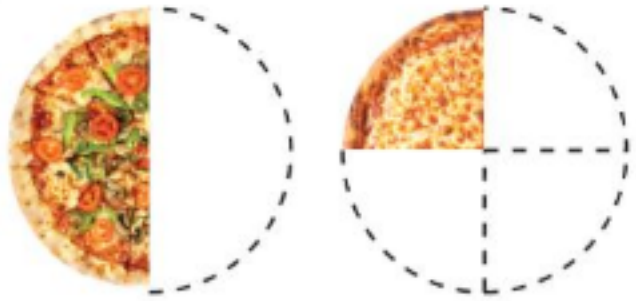
So, each mold holds _____ quart of soap.

Show and Grow

13. You buy $\frac{1}{2}$ pound of grapes. You equally divide the grapes into 2 bags. What fraction of a pound of grapes do you put into each bag?

14. You have $\frac{1}{8}$ cup of red sand, $\frac{1}{4}$ cup of blue sand, and $\frac{1}{2}$ cup of white sand. You equally divide the sand into 3 containers. What fraction of a cup of sand do you pour into each container?

15. **DIG DEEPER!** You, your friend, and your cousin share $\frac{1}{2}$ of a vegetable pizza and $\frac{1}{4}$ of a cheese pizza. The pizzas are the same size. What fraction of a pizza do you get in all?



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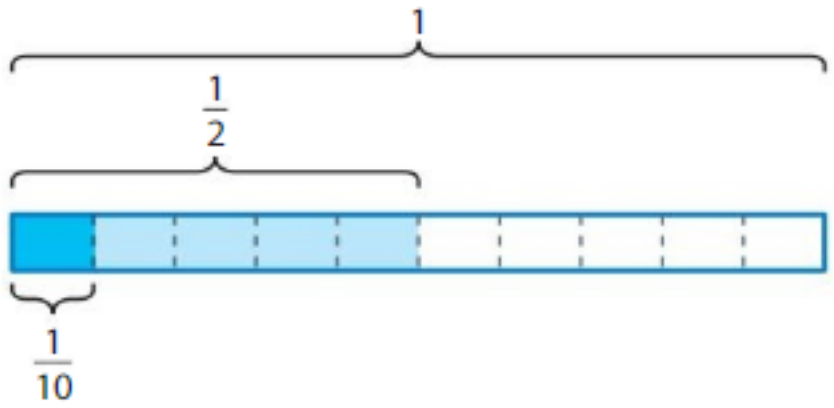
Homework & Practice 10.4

Learning Target: Divide unit fractions by whole numbers.

Example Find $\frac{1}{2} \div 5$.

One Way: Use a tape diagram. Divide $\frac{1}{2}$ into 5 equal parts.



Each of the 5 equal parts of $\frac{1}{2}$ represents $\frac{1}{10}$ of the whole.

So, $\frac{1}{2} \div 5 = \frac{1}{10}$.

Dividing by a number b is the same as multiplying by $\frac{1}{b}$.

So, $\frac{1}{a} \div b = \frac{1}{a} \times \frac{1}{b} = \frac{1}{a \times b}$.



Another Way: Use an area model to represent 1 whole. Divide $\frac{1}{2}$ into 5 equal parts.



Each of the 5 equal parts of $\frac{1}{2}$ represents $\frac{1}{10}$ of the whole.

So, $\frac{1}{2} \div 5 = \frac{1}{10}$.

Divide. Use a model to help.

1. $\frac{1}{3} \div 4 =$ _____

2. $\frac{1}{6} \div 3 =$ _____

3. $\frac{1}{4} \div 5 =$ _____

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Divide. Use a model to help.

4. $\frac{1}{5} \div 9 =$ _____

5. $\frac{1}{8} \div 6 =$ _____

6. $\frac{1}{7} \div 4 =$ _____

7. **YOU BE THE TEACHER** Your friend divides $\frac{1}{3}$ by 7 to get $\frac{1}{21}$. He checks his answer by multiplying $\frac{1}{21} \times \frac{1}{3}$. Does your friend check his answer correctly? Explain.

8. **Logic** Find the missing numbers.

$$\frac{1}{4} \div \square = \frac{1}{4} \times \frac{\square}{6} = \frac{1}{\square \times 6}$$

9. **Modeling Real Life** You win tickets that you can exchange for prizes. You exchange $\frac{1}{5}$ of your tickets and then divide them equally among 3 prizes. What fraction of your tickets do you spend on each prize?

10. **DIG DEEPER!** You have $\frac{1}{8}$ gallon of melted crayon wax. You pour the wax equally into 8 different molds to make new crayons. What fraction of a cup of melted wax is in each mold? Think: 1 gallon is 16 cups.



Review & Refresh

Find the quotient.

11. $0.9 \div 0.1 =$ _____

12. $38.6 \div 100 =$ _____

13. $2.57 \div 0.01 =$ _____

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Problem Solving: Fraction Division

10.5

Learning Target: Solve multi-step word problems involving division with fractions.

Success Criteria:

- I can understand a problem.
- I can make a plan to solve.
- I can solve a problem using an equation.

FLORIDA STANDARDS
MAFS.5.NF.2.7c

Explore and Grow

You want to make a $\frac{1}{3}$ batch of the recipe. How you can use division to find the amount of each ingredient you need?

Zucchini Fries

- 4 zucchini
- $\frac{1}{3}$ cup cheese
- $\frac{1}{2}$ tablespoon spices
- 2 tablespoons olive oil



MP **Reasoning** Without calculating, explain how you can tell whether you need more than or less than 1 tablespoon of olive oil.

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Think and Grow: Problem Solving: Fraction Division

Example You have 4 cups of yellow paint and 3 cups of blue paint. How many batches of green paint can you make?



Understand the Problem

What do you know?

- You have 4 cups of yellow paint and 3 cups of blue paint.
- One batch of green paint is made of $\frac{1}{2}$ cup of yellow and $\frac{1}{3}$ cup of blue.

What do you need to find?

- You need to find how many batches of green paint you can make.

Make a Plan

How will you solve?

- Find how many batches are possible from yellow, and how many from blue.
- Choose the lesser number of batches.

Solve

Number of batches possible	=	Amount of yellow paint	÷	Amount needed for one batch

Let y represent the number of batches you can make from the yellow.

$y = 4 \div \frac{1}{2}$

$= 4 \times$ _____

$=$ _____



Number of batches possible	=	Amount of blue paint	÷	Amount needed for one batch

Let b represent the number of batches you can make from the blue.

$b = 3 \div \frac{1}{3}$

$= 3 \times$ _____

$=$ _____



_____ < _____

So, you can make _____ batches of green paint.

Show and Grow

1. In the example, explain why you choose the fewer number of batches.

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Apply and Grow: Practice

Understand the problem. What do you know? What do you need to find? Explain.

2. A landowner donates 3 acres of land to a city. The mayor of the city uses 1 acre of the land for a playground and the rest of the land for community garden plots. Each garden plot is $\frac{1}{3}$ acre. How many plots are there?

3. Your friend uses $2\frac{1}{2}$ pounds of dried fruit and $\frac{1}{2}$ pound of raisins to make trail mix. How many $\frac{1}{2}$-pound packages can he make?

Understand the problem. Then make a plan. How will you solve? Explain.

4. A craftsman uses $\frac{3}{4}$ gallon of paint to paint 4 identical dressers. He uses the same amount of paint on each dresser. How much paint does he use to paint 7 of the same dressers?



5. An airplane travels 125 miles in $\frac{1}{4}$ hour. It travels the same number of miles each hour. How many miles does the plane travel in 5 hours?

6. You make bows for gifts using $\frac{2}{3}$ yard of ribbon for each bow. You have 4 feet of red ribbon and 5 feet of green ribbon. How many bows can you make?

7. A landscaper buys 1 gallon of plant fertilizer. He uses $\frac{1}{5}$ of the fertilizer, and then divides the rest into 3 smaller bottles. How many gallons does he put into each bottle?

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Think and Grow: Modeling Real Life

Example A sponsor donates \$0.10 to a charity for every $\frac{1}{4}$ kilometer of the triathlon an athlete completes. The athlete completes the entire triathlon. How much money does the sponsor donate?

Triathlon Components	
Sport	**Distance**
Swimming	1.9 km
Biking	90 km
Running	21.1 km

Think: What do you know? What do you need to find? How will you solve?

Write and solve an equation.

Add 1.9, 90, and 21.1 to find how many kilometers the athlete completes.

Divide the sum by $\frac{1}{4}$ to find how many $\frac{1}{4}$ kilometers the athlete completes.

Multiply the quotient by \$0.10 to find how much money the sponsor donates.

Total amount of money donated = (Swimming distance + Biking distance + Running distance) ÷ Distance counted for donation × Amount of money donated

Let m represent the total amount of money donated.

$m = (1.9 + 90 + 21.1) \div \frac{1}{4} \times 0.10$

$= 113 \div \frac{1}{4} \times 0.10$

$= \_\_\_\_\_ \times 0.10$

$= \_\_\_\_\_$

So, the sponsor donates \$_____ to the charity.

Show and Grow

8. You earn \$5 for every $\frac{1}{2}$ hour you do yard work. How much money do you earn in 1 week?

Yard Work Completed in 1 Week	
Task	**Amount of Time**
Mowing lawns	$5\frac{1}{2}$ hours
Raking leaves	3 hours
Watering plants	$1\frac{1}{2}$ hours

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Name _____

Homework & Practice 10.5

Learning Target: Solve multi-step word problems involving division with fractions.

Example You have 6 cups of pasta and 4 cups of pesto. You need $\frac{1}{2}$ cup of pasta and $\frac{1}{8}$ cup of pesto to make 1 serving of a recipe. How many servings of the recipe can you make?

Think: What do you know? What do you need to find? How will you solve?

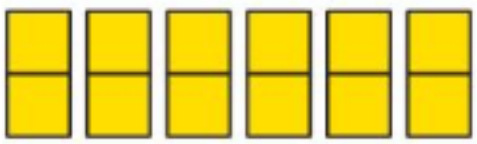
Number of servings possible	=	Amount of pasta	÷	Amount needed for one serving

Let k represent the number of servings of the recipe you can make from the pasta.

$k = 6 \div \frac{1}{2}$

$= 6 \times \underline{2}$

$= \underline{12}$



Number of servings possible	=	Amount of pesto	÷	Amount needed for one serving

Let j represent the number of servings of the recipe you can make from the pesto.

$j = 4 \div \frac{1}{8}$

$= 4 \times \underline{8}$

$= \underline{32}$



$\underline{12} < \underline{32}$

So, you can make 12 servings of the recipe.

Understand the problem. Then make a plan. How will you solve? Explain.

1. A train travels 75 miles in $\frac{1}{2}$ hour. How many miles does the train travel in 8 hours?

2. You need $\frac{2}{3}$ yard of fabric to create a headband. You have 12 feet of blue fabric and 4 feet of yellow fabric. How many headbands can you make with all of the fabric?

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3. An art teacher has 8 gallons of paint. Her class uses $\frac{3}{4}$ of the paint. The teacher divides the rest of the paint into 4 bottles. How much paint is in each bottle?

4. You mix $3\frac{1}{4}$ cups of frozen strawberries and $4\frac{1}{2}$ cups of frozen blueberries in a bowl. A smoothie requires $\frac{1}{2}$ cup of your berry mix. How many smoothies can you make?

5. **Modeling Real Life** A sponsor donates \$0.10 for every $\frac{1}{4}$ dollar donated at the locations shown. How much money does the sponsor donate?

Donation Collections	
Location	**Amount Collected**
Pet store	\$25.25
Hardware store	\$12.50
Supermarket	\$63.25

6. DIG DEEPER! A nurse earns \$16 for every $\frac{1}{2}$ hour at work. How much money does she earn in 5 days?

Work Completed in 1 Day	
Task	**Amount of Time**
Monitor patients	$6\frac{3}{4}$ hours
Do paperwork	1 hour
Research	$\frac{1}{4}$ hour

Review & Refresh

Find the quotient. Then check your answer.

7. $12\overline{)185.88}$

8. $24\overline{)74.4}$

9. $46\overline{)42.32}$

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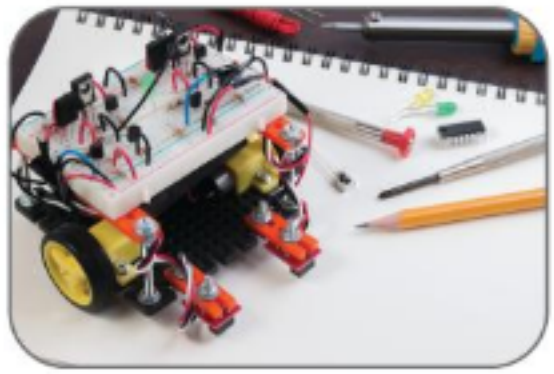
Name _____

Performance Task 10

Your city has a robotics competition. Each team makes a robot that travels through a maze. The time each robot spends in the maze is used to find the team's score.



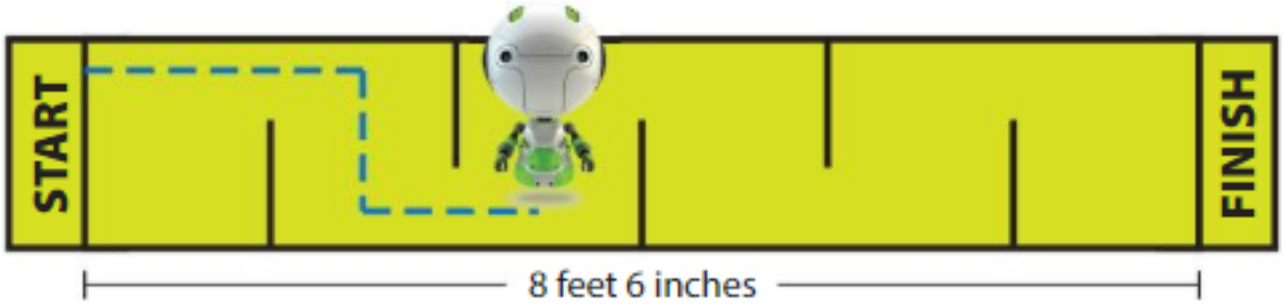
1. One-third of the students in your grade participate in the competition. The number of participating students is divided into 12 teams.

a. What fraction of the total number of students in your grade is on each team?

b. There are 3 students on each team. How many students are in your grade?

2. The maze for the competition is shown.

a. Write the length of the maze in feet.



b. The length of the maze is divided into 6 equal sections. What is the length of each section of the maze?

3. Each team has 200 seconds to complete the maze. The rules require judges to use the expression $(200 - x) \div \frac{1}{5}$, where x is the total number of seconds, to find a team's total score.

a. Your robot completes the maze in 3 minutes 5 seconds. How many points does your team earn?

b. Do you think the team with the most points or the fewest points wins? Use an example to justify your answer.

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Fraction Connection: Division

Directions:

1. Players take turns rolling three dice.
2. On your turn, evaluate the expression indicated by your roll and cover the answer.
3. The first player to get four in a row, horizontally, vertically, or diagonally, wins!

Roll	Evaluate
3	$3 \div 6$
4	$5 \div 2$
5	$4 \div \frac{1}{5}$
6	$\frac{1}{3} \div 2$
7	$2 \div 5$
8	$7 \div 3$
9	$6 \div \frac{1}{2}$
10	$\frac{1}{4} \div 3$

Roll	Evaluate
11	$4 \div 7$
12	$9 \div 4$
13	$2 \div \frac{1}{4}$
14	$\frac{1}{5} \div 4$
15	$5 \div 8$
16	$4 \div 2$
17	$8 \div \frac{1}{3}$
18	$\frac{1}{2} \div 5$

$2\frac{1}{2}$	$\frac{5}{8}$	$\frac{1}{12}$	2
$\frac{4}{7}$	$\frac{1}{2}$	3	$\frac{2}{5}$
8	$2\frac{2}{3}$	$2\frac{1}{4}$	$\frac{1}{6}$
$\frac{1}{10}$	$2\frac{1}{3}$	20	$\frac{1}{20}$



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Name _____

Chapter Practice 10

10.1 Interpret Fractions as Division

Divide. Use a model to help.

1. $1 \div 2 =$ _____

2. $3 \div 10 =$ _____

3. $4 \div 7 =$ _____

4. $11 \div 15 =$ _____

5. $8 \div 9 =$ _____

6. $13 \div 20 =$ _____

7. **Modeling Real Life** Nine friends equally share 12 apples. What fraction of an apple does each friend get?

10.2 Mixed Numbers as Quotients

Divide. Use a model to help.

8. $8 \div 3 =$ _____

9. $6 \div 5 =$ _____

10. $10 \div 4 =$ _____

11. $20 \div 11 =$ _____

12. $25 \div 2 =$ _____

13. $64 \div 9 =$ _____

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10.3 Divide Whole Numbers by Unit Fractions

Divide. Use a model to help.

14. $4 \div \frac{1}{2} =$ _____

15. $6 \div \frac{1}{5} =$ _____

16. $7 \div \frac{1}{4} =$ _____

17. $8 \div \frac{1}{3} =$ _____

18. $9 \div \frac{1}{2} =$ _____

19. $2 \div \frac{1}{10} =$ _____

10.4 Divide Unit Fractions by Whole Numbers

Divide. Use a model to help.

20. $\frac{1}{7} \div 2 =$ _____

21. $\frac{1}{2} \div 9 =$ _____

22. $\frac{1}{3} \div 7 =$ _____

23. $\frac{1}{6} \div 5 =$ _____

24. $\frac{1}{7} \div 3 =$ _____

25. $\frac{1}{8} \div 4 =$ _____

10.5 Problem Solving: Fraction Division

26. A mechanic buys 1 gallon of oil. She uses $\frac{1}{6}$ of the oil, and then divides the rest into 4 smaller bottles. How much does she put into each bottle?



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11 Convert and Display Units of Measure

- Passenger airliners fly people and cargo all over the world. What types of cargo do you think are flown on an airplane?
- An airliner can hold at most 30 tons of weight from passengers and cargo. Why might it be important for the pilot of an airliner to be able to convert between units of measure?

Chapter Learning Target:
Understand measurement.

Chapter Success Criteria:
- I can identify length in metric units.
- I can describe mass and capacity in metric units.
- I can solve a problem using different ways to measure items.
- I can compare the values of two different forms of measurement.



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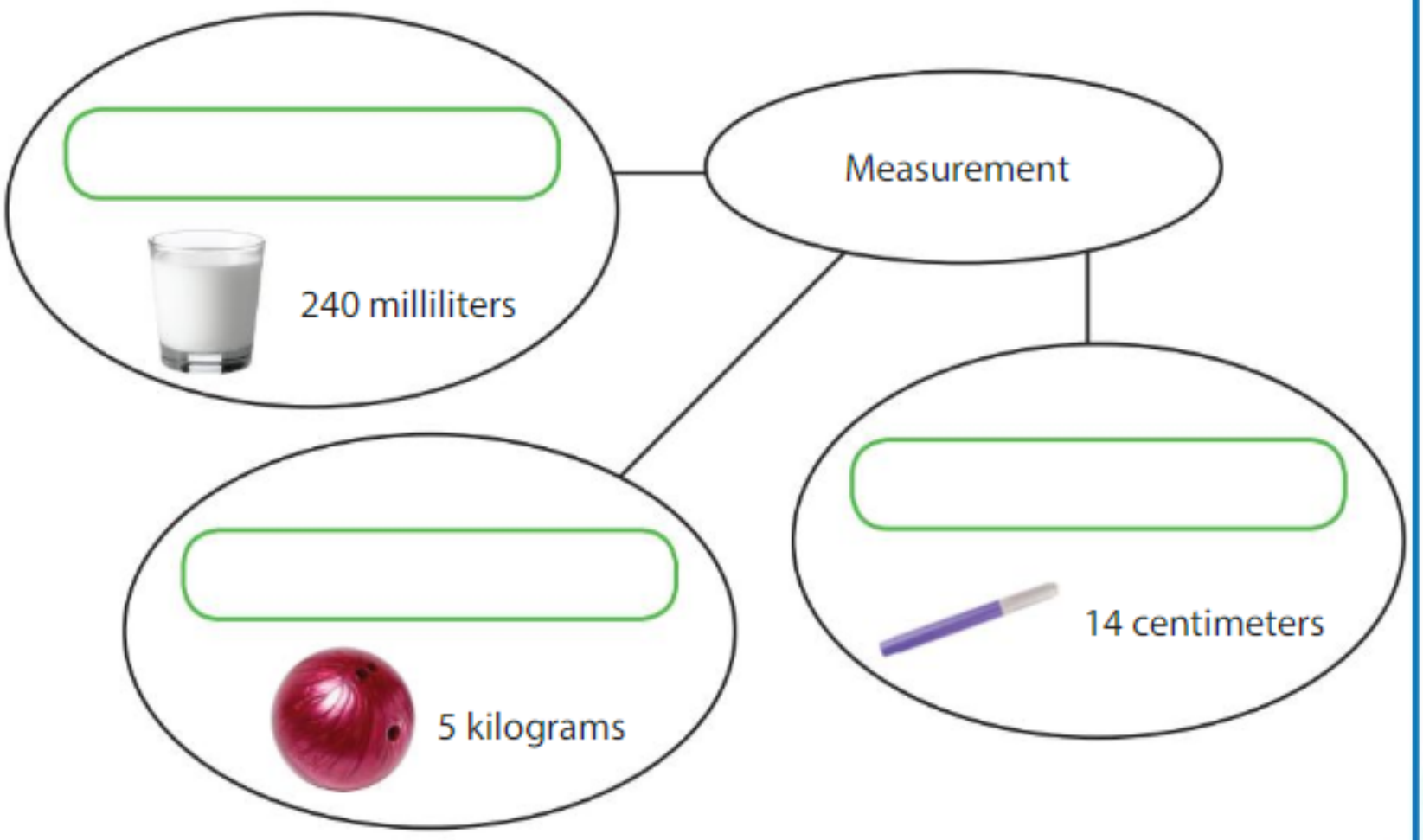
11 Vocabulary

Review Words

length
capacity
mass

Organize It

Use the review words to complete the graphic organizer.



Define It

Use your vocabulary cards to complete each definition.

1. milligrams: A _____ unit used to measure _____

2. fluid ounces: A _____ unit used to measure _____

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Chapter 11 Vocabulary Cards

fluid ounces
(fl oz)

milligrams
(mg)

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A metric unit used to measure mass



One piece of salt weighs about 1 milligram.

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A customary unit used to measure capacity



There are 8 fluid ounces in 1 cup.

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Name _____

Length in Metric Units 11.1

Learning Target: Write lengths using equivalent metric measures.

Success Criteria:

- I can compare the sizes of two metric units of length.
- I can write a metric length using a smaller metric unit.
- I can write a metric length using a larger metric unit.

FLORIDA STANDARDS
MAFS.5.MD.1.1

Explore and Grow

Work with a partner. Find 3 objects in your classroom and use a meter stick to measure them. Record your measurements in the table.

Object	Length (meters)	Length (centimeters)	Length (millimeters)

1 centimeter is _____ times as long as 1 millimeter.

1 meter is _____ times as long as 1 centimeter.

1 meter is _____ times as long as 1 millimeter.

MP **Structure** How can you convert a metric length from a larger unit to a smaller unit? How can you convert a metric length from a smaller unit to a larger unit?

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Think and Grow: Convert Metric Lengths

You can use powers of 10 to find equivalent measures in the metric system.

kilometer	hectometer	dekameter	meter	decimeter	centimeter	millimeter
10^3 m	10^2 m	10 m	1 m	0.1 m	0.01 m	0.001 m

Key Idea When finding equivalent metric lengths, multiply to convert from a larger unit to a smaller unit. Divide to convert from a smaller unit to a larger unit.

Metric Units of Length
1 centimeter (cm) = 10 millimeters (mm)
1 meter (m) = 100 centimeters (cm)
1 kilometer (km) = 1,000 meters (m)

Example Convert 6 centimeters to millimeters.

There are _____ millimeters in 1 centimeter.

Because you are converting from a larger unit to a smaller unit, multiply.

6 × _____ = _____

So, 6 centimeters is _____ millimeters.

Example Convert 14,000 meters to kilometers.

There are _____ meters in 1 kilometer.

Because you are converting from a smaller unit to a larger unit, divide.

14,000 ÷ _____ = _____

So, 14,000 meters is _____ kilometers.

Show and Grow

Convert the length.

1. 8.5 km = _____ m

2. 180 cm = _____ m

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Name _____

Apply and Grow: Practice

Convert the length.

3. 150 m = _____ km

4. 90 cm = _____ mm

5. 0.03 m = _____ cm

6. 0.6 km = _____ cm

7. 800 mm = _____ m

8. 700 cm = _____ km

Compare.

9. 0.02 m ◯ 3 mm

10. 48,000 cm ◯ 0.48 km

11. 0.025 km ◯ 3,500 mm

12. The giant anteater has the longest tongue in relation to its body size of any mammal. Its tongue is about 0.6 meter long. How many centimeters long is its tongue?



13. MP **Number Sense** The length of an object can be written as b millimeters or c kilometers. Compare the values of b and c. Explain your reasoning.

14. **Writing** Why does the decimal point move to the left when converting from a smaller measure to a larger measure?

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Think and Grow: Modeling Real Life



Mauna Kea, a volcano in Hawaii, rises about 4,200 meters above sea level.

Example The base of Mauna Kea extends about 5.76 kilometers below sea level. What is the total height of the volcano in meters?

Convert the distance below sea level to meters.

There are _____ meters in 1 kilometer.

5.76 × _____ = _____

So, the volcano extends _____ meters below sea level.

Add the distance below sea level and the distance above sea level.

$$\begin{array}{r} 4{,}200 \\ +\ \square \\ \hline \end{array}$$

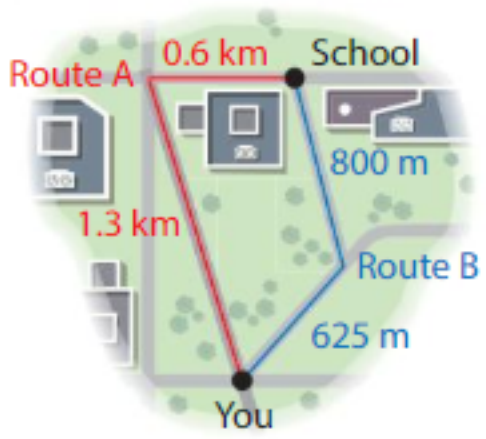
So, the total height of the volcano is about _____ meters.

Show and Grow

15. A pool is 3.65 meters deep. A diving board is 100 centimeters above the surface of the water. What is the distance from the diving board to the bottom of the pool in centimeters?

16. You hike 1.6 kilometers from a cabin to a lookout. You plan to hike the same way back. On your way back, you stop after 1,050 meters to look at a map. How many meters have you hiked so far? How many kilometers are you from the cabin?

17. DIG DEEPER! You can take one of two routes to school. Which route is longer? How much longer? Write your answer two different ways.



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Name _____

Homework & Practice 11.1

Learning Target: Write lengths using equivalent metric measures.

Example Convert 0.02 kilometer to meters.

There are 1,000 meters in 1 kilometer.

Because you are converting from a larger unit to a smaller unit, multiply.

0.02 × 1,000 = 20

So, 0.02 kilometer is 20 meters.

Convert the length.

1. 0.8 cm = _____ mm

2. 7 m = _____ km

3. 6.4 km = _____ m

4. 1,300 mm = _____ cm

5. 91,000 cm = _____ km

6. 20,000 mm = _____ km

Compare.

7. 16 cm ◯ 1.6 m

8. 300 mm ◯ 0.3 m

9. 0.045 km ◯ 45 mm

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10. Dolphins can hear sounds underwater that are 24 kilometers away. How many meters away can dolphins hear sounds underwater?

11. MP **Reasoning** How can you convert 7.8 meters to kilometers by moving the decimal point? Explain your reasoning.

12. **YOU BE THE TEACHER** Your friend divides by 100 to convert a length from meters to centimeters. Is your friend correct? Explain.

13. **Which One Doesn't Belong?** Which measurement does *not* belong with the other three?

0.5 km	500,000 mm
500 m	5,000 cm

14. **Modeling Real Life** A small chunk of ice called a *growler* breaks away from an iceburg. The growler sticks out of the water 840 millimeters and is 3.5 meters deep in the water. What is the total height of the growler in meters?

15. **DIG DEEPER!** A spaceship's route from Earth to the moon is 384,400 kilometers long. The spaceship travels 500,000 meters. How many kilometers does it have left to travel?



Review & Refresh

Write the fraction in simplest form.

16. $\frac{2}{8}$

17. $\frac{10}{100}$

18. $\frac{24}{16}$

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Name _____

Mass and Capacity in Metric Units

11.2

Learning Target: Write masses and capacities using equivalent metric measures.

Success Criteria:

- I can compare the sizes of two metric units of mass and capacity.
- I can write metric masses and capacities using smaller metric units.
- I can write metric masses and capacities using larger metric units.

FLORIDA STANDARDS
MAFS.5.MD.1.1

Explore and Grow

Use a balance and weights to help you complete the statement.



1 kilogram is _____ times as much as 1 gram.

MP **Structure** How can you convert kilograms to grams? How can you convert grams to kilograms?

Use a 1-liter beaker to help you complete the statement.



1 liter is _____ times as much as 1 milliliter.

MP **Structure** How can you convert liters to milliliters? How can you convert milliliters to liters?

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Think and Grow: Convert Metric Measures

Key Idea When finding equivalent metric masses or capacities, multiply to convert from a larger unit to a smaller unit. Divide to convert from a smaller unit to a larger unit.

Metric Units of Mass
1 gram (g) = 1,000 **milligrams** (mg)
1 kilogram (kg) = 1,000 grams (g)

Metric Units of Capacity
1 liter (L) = 1,000 milliliters (mL)

Example Convert 12.4 grams to milligrams.

Think, there will be more milligrams than grams. So, it makes sense to multiply.



There are _____ milligrams in 1 gram.

Because you are converting from a larger unit to a smaller unit, multiply.

12.4 × _____ = _____

So, 12.4 grams is _____ milligrams.

Example Convert 18,000 milliliters to liters.

Think, there will be fewer liters than milliliters. So, it makes sense to divide.



There are _____ milliliters in 1 liter.

Because you are converting from a smaller unit to a larger unit, divide.

18,000 ÷ _____ = _____

So, 18,000 milliliters is _____ liters.

Show and Grow

Convert the mass.

1. 8 kg = _____ g

2. 3,800 mg = _____ g

Convert the capacity.

3. 22,000 mL = _____ L

4. 4.6 L = _____ mL

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Name _____

Apply and Grow: Practice

Convert the mass.

5. 5,000 g = _____ kg

6. 67 g = _____ mg

7. 0.2 kg = _____ mg

8. 30,000 mg = _____ kg

Convert the capacity.

9. 8 L = _____ mL

10. 70 mL = _____ L

11. 200 mL = _____ L

12. 0.4 L = _____ mL

13. What is the mass of the pumpkin in kilograms?



6,000 grams

14. **Which One Doesn't Belong?** Which one does *not* have the same capacity as the other three?

2,000 mL 2 L

2 mL 2×10^3 mL

15. DIG DEEPER! Order the masses from least to greatest. Explain how you converted the masses.

0.039 kg	14,000 mg	56 g	0.14 kg

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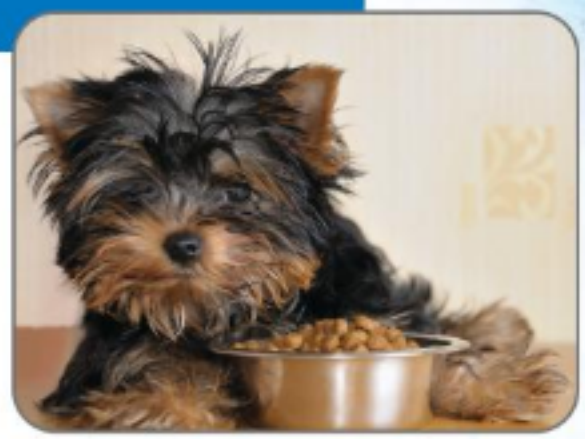
Think and Grow: Modeling Real Life



Example You have a 5-kilogram bag of dog food. You give your dog 50 grams of food each day. How many days does the bag of food last?

Convert the mass of the bag to grams.

There are _____ grams in 1 kilogram.

5 × _____ = _____

So, the bag contains _____ grams of dog food.

Divide the amount of dog food in the bag by the amount you give your dog each day.

_____ ÷ 50 = _____

So, the bag lasts for _____ days.

Show and Grow

16. You have 6 liters of juice to make frozen treats. You pour 30 milliliters of juice into each treat mold. How many treats can you make?

17. Your goal is to eat no more than 2.3 grams of sodium each day. You record the amounts of sodium you eat. How many more milligrams of sodium can you eat and not exceed your limit?

Meal	Sodium You Eat (milligrams)
Breakfast	210
Snack	250
Lunch	690



2 L



200 mL

18. **DIG DEEPER!** Which contains more juice, 3 of the bottles, or 32 of the juice boxes? How much more? Write your answer in milliliters.

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Name _____

Homework & Practice 11.2

Learning Target: Write masses and capacities using equivalent metric measures.

Example Convert 0.5 liter to milliliters.

There are 1,000 milliliters in 1 liter.

Because you are converting from a larger unit to a smaller unit, multiply.

$0.5 \times 1{,}000 = 500$

So, 0.5 liter is 500 milliliters.

Convert the mass.

1. 9 g = _____ mg

2. 78 g = _____ kg

3. 260,000 mg = _____ kg

4. 0.148 kg = _____ mg

Convert the capacity.

5. 600 mL = _____ L

6. 3 L = _____ mL

7. 0.21 L = _____ mL

8. 35 mL = _____ L

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9. There are 3.2 liters of iced tea in a pitcher. How many milliliters of iced tea are in the pitcher?

10. **YOU BE THE TEACHER** Your friend says that 0.04 kilogram is less than 4×10^5 milligrams. Is your friend correct? Explain.

11. **Number Sense** How does the meaning of each prefix relate to the metric units of mass and capacity?

Prefix	Definition
kilo-	one thousand
milli-	one thousandth

12. **Modeling Real Life** You have 9 kilograms of corn kernels. You put 450 grams of corn kernels in each bag. How many bags can you make?



13. **DIG DEEPER!** Your teacher has one of each of the beakers shown. You need to measure exactly 2 liters of liquid for an experiment. What are three different ways you can do this?



400 mL



600 mL



1 L

Review & Refresh

14. Newton rides to the store in a taxi. He owes the driver $12. He calculates the driver's tip by multiplying $12 by 0.15. How much money does he pay the driver, including the tip?

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Name _____

Length in Customary Units 11.3

Learning Target: Write lengths using equivalent customary measures.

Success Criteria:

- I can compare the sizes of two customary units of length.
- I can write a customary length using a smaller customary unit.
- I can write a customary length using a larger customary unit.

FLORIDA STANDARDS
MAFS.5.MD.1.1

Explore and Grow

Work with a partner. Use a yard stick to draw 3 lines on a whiteboard that are 1 yard, 2 yards, and 3 yards in length. Then measure the lengths of the lines in feet and in inches. Record your measurements in the table.

Length (yards)	Length (feet)	Length (inches)
1		
2		
3		

1 foot is _____ times as long as 1 inch.

1 yard is _____ times as long as 1 foot.

1 yard is _____ times as long as 1 inch.

MP **Structure** How can you convert a customary length from a larger unit to a smaller unit? How can you convert a customary length from a smaller unit to a larger unit?

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Think and Grow: Convert Customary Lengths

Key Idea When finding equivalent customary lengths, multiply to convert from a larger unit to a smaller unit. Divide to convert from a smaller unit to a larger unit.

Customary Units of Length
1 foot (ft) = 12 inches (in.)
1 yard (yd) = 3 feet (ft)
1 mile (mi) = 1,760 yards (yd)

Example Convert 3 miles to yards.

There are _____ yards in 1 mile.

Because you are converting from a larger unit to a smaller unit, multiply.

3 × _____ = _____

So, 3 miles is _____ yards.

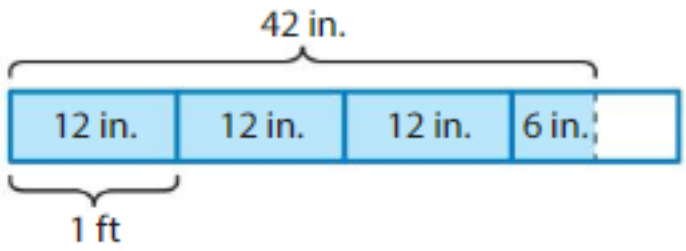
Example Convert 42 inches to feet and inches.



There are _____ inches in 1 foot.

Because you are converting from a smaller unit to a larger unit, divide.

42 ÷ _____ = _____ R _____



So, 42 inches is _____ feet _____ inches.

Show and Grow

Convert the length.

1. $6\frac{1}{2}$ ft = _____ in.

2. 94 in. = _____ ft _____ in.

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Name _____

Apply and Grow: Practice

Convert the length.

3. $3\frac{3}{4}$ ft = _____ in.

4. 60 in. = _____ ft

5. 375 ft = _____ yd

6. $12\frac{2}{3}$ yd = _____ ft

7. 51 in. = _____ ft _____ in.

8. 5 yd = _____ in.

Compare.

9. $7\frac{1}{3}$ yd ◯ 22 ft

10. 54 in. ◯ 4 ft 8 in.

11. 216 in. ◯ 6 yd

12. A dugong is $8\frac{1}{3}$ feet long. How many inches long is the dugong?



The dugong lives in the Great Barrier Reef.

13. DIG DEEPER! Order the lengths from shortest to longest. Explain how you converted the lengths.

$5\frac{1}{2}$ feet | 5 feet 3 inches | $5\frac{2}{3}$ feet | $5\frac{3}{4}$ feet

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Think and Grow: Modeling Real Life



Example A golfer uses a device to determine that his golf ball is 265 feet from a hole. After his next shot, his ball is 15 feet short of the hole. How many yards did the golfer hit his ball?

Because the golfer's ball is 15 feet short of the hole after his next shot, subtract 15 from 265 to find how many feet the golfer hit his ball.

265 − 15 = _____ feet

Convert the number of feet the golfer hit his ball to yards.

There are _____ feet in 1 yard.

Because you are converting from a smaller unit to a larger unit, divide.

$$3\overline{)250} \quad 83 \text{ R } \_\_\_\_$$

$$-\ \square$$

$$\square$$

$$-\ \square$$

$$\square$$

remainder / divisor → $\frac{\square}{\square}$

To determine how many yards the golfer hit his ball, write the quotient and remainder as a mixed number.

_____ R _____ = $\square\frac{\square}{\square}$ yards So, the golfer hit his ball _____ yards.

Show and Grow

14. A tree is 27 feet tall. After the tree is struck by lightning, it is 96 inches shorter. How many feet tall is the tree after it is struck by lightning?

15. **DIG DEEPER!** The rope ladder is $2\frac{1}{2}$ yards tall. Each knot is made using 16 inches of rope. How many feet of rope are used to make the ladder? Explain.



16. **DIG DEEPER!** The Chesapeake Bay Bridge is $4\frac{3}{10}$ miles long. Road work begins 1,200 yards from one end of the bridge and ends 2 miles from the other end of the bridge. How many yards long is the road work?

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Name _____

Homework & Practice 11.3

Learning Target: Write lengths using equivalent customary measures.

Example Convert $7\frac{3}{4}$ feet to inches.

There are 12 inches in 1 foot.

Because you are converting from a larger unit to a smaller unit, multiply.

$7\frac{3}{4} \times \underline{12} = \frac{31}{4} \times \underline{12} = \frac{\underline{372}}{4}$

So, $7\frac{3}{4}$ feet is $\frac{372}{4}$, or 93 inches.

Convert the length.

1. $2\frac{1}{3}$ ft = _____ in.

2. 5 mi = _____ yd

3. $3\frac{1}{3}$ yd = _____ ft

4. 27 in. = _____ ft _____ in.

5. 108 in. = _____ yd

6. 34 in. = _____ ft

Compare.

7. $5\frac{3}{4}$ ft ◯ 65 in.

8. 19 in. ◯ 1 ft 5 in.

9. 2 mi ◯ 10,650 ft

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10. A football player runs 93 yards. How many feet does he run?



11. MP **Precision** Write whether you would use *multiplication* or *division* for each conversion.

yards to feet:

miles to inches:

feet to miles:

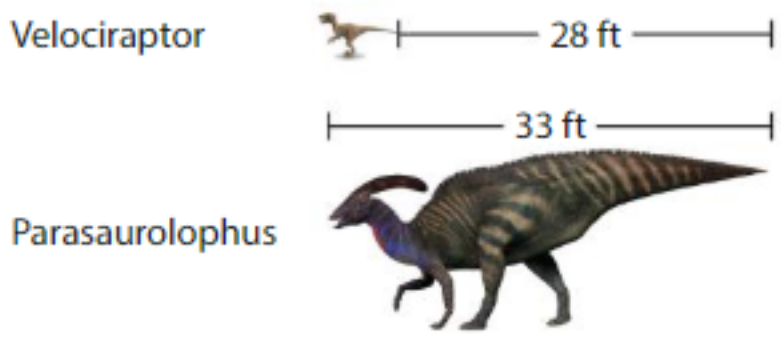
inches to feet:

miles to yards:

12. MP **Reasoning** Match each measurement with the best customary unit of measure.

height of a jump	inches
length of a crayon	feet
length of a river	yards
length of a football field	miles

13. **Modeling Real Life** How long is the velociraptor in yards?



14. DIG DEEPER! You wrap a cube-shaped box with ribbon as shown. The ribbon is wrapped around all of the faces of the cube. You use 9 inches of ribbon for the bow. How many inches of ribbon do you use altogether? Explain.



Review & Refresh

Find the quotient.

15. 3,200 ÷ 40 = _____

16. 5,400 ÷ 9 = _____

17. 600 ÷ 20 = _____

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Name _____

Weight in Customary Units

11.4

Learning Target: Write weights using equivalent customary measures.

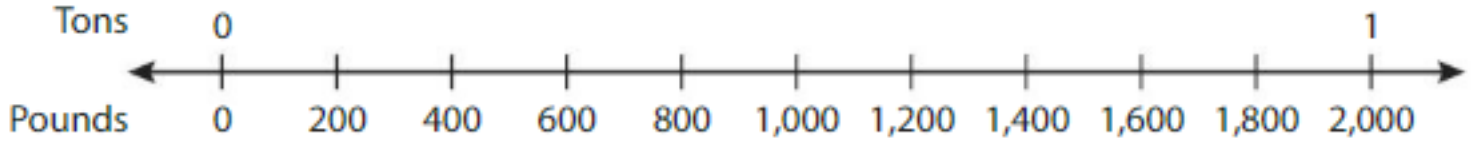
Success Criteria:

- I can compare the sizes of two customary units of weight.
- I can write a customary weight using a smaller customary unit.
- I can write a customary weight using a larger customary unit.

FLORIDA STANDARDS
MAFS.5.MD.1.1

Explore and Grow

Work with a partner. Use the number line to help you complete each statement.





Vehicle: 2 tons

The vehicle weighs _____ pounds.



Whale Shark: 30,000 pounds

The whale shark weighs _____ tons.

MP **Structure** How can you convert tons to pounds? How can you convert pounds to tons?

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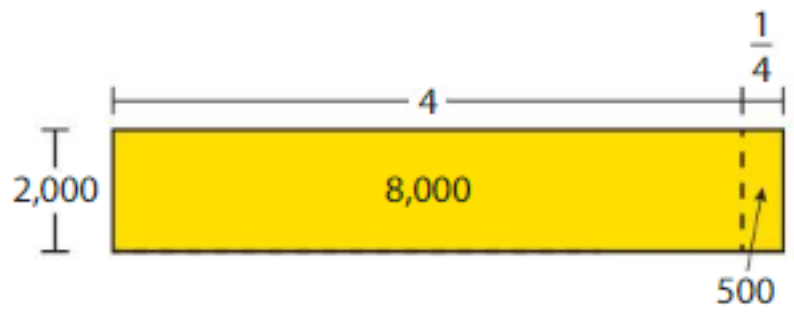
Think and Grow: Convert Customary Weights

Key Idea When finding equivalent customary weights, multiply to convert from a larger unit to a smaller unit. Divide to convert from a smaller unit to a larger unit.

Customary Units of Weight
1 pound (lb) = 16 ounces (oz)
1 ton (T) = 2,000 pounds (lb)

Example Convert $4\frac{1}{4}$ tons to pounds.



There are _____ pounds in 1 ton.

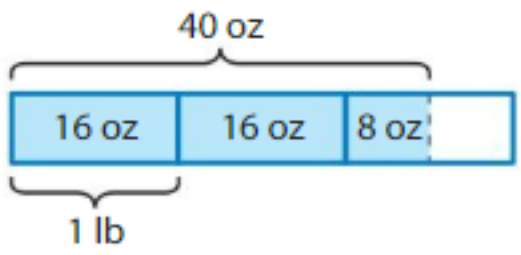
Because you are converting from a larger unit to a smaller unit, multiply.

$4\frac{1}{4} \times$ _____ = (4 × _____) + $\left(\frac{1}{4} \times$ _____$\right)$

= _____

So, $4\frac{1}{4}$ tons is _____ pounds.

Example Convert 40 ounces to pounds.

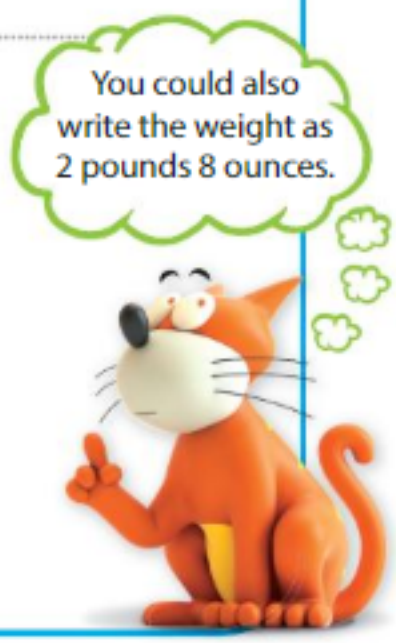


There are _____ ounces in 1 pound.

Because you are converting from a smaller unit to a larger unit, divide.

40 ÷ _____ = $\square\frac{\square}{\square}$

So, 40 ounces is _____ pounds.



Show and Grow

Convert the weight.

1. 9 T = _____ lb

2. $6\frac{1}{2}$ lb = _____ oz

3. 6,000 lb = _____ T

4. 80 oz = _____ lb

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Name _____

Apply and Grow: Practice

Convert the weight.

5. 10,000 lb = _____ T

6. 8 lb = _____ oz

7. 240 oz = _____ lb

8. $7\frac{1}{4}$ T = _____ lb

9. 150 oz = _____ lb _____ oz

10. 32,000 oz = _____ T

Compare.

11. 30 T ◯ 6,000 lb

12. 53 oz ◯ $3\frac{1}{2}$ lb

13. 8 T ◯ 224,000 oz

14. What is the weight of the hippopotamus in tons?



4,000 pounds

15. MP **Reasoning** Compare 10 pounds and 165 ounces using mental math. Explain.

16. MP **Number Sense** Which measurements are equivalent to 60 ounces?

$3\frac{3}{4}$ lb

$3\frac{1}{2}$ lb

3 lb 12 oz

3 lb 4 oz

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Think and Grow: Modeling Real Life



Example A newborn baby boy weighs 122 ounces. A newborn baby girl weighs 6 pounds 4 ounces. Which baby weighs more? How much more?

Convert the weight of the boy to pounds and ounces.

There are _____ ounces in 1 pound.

122 ÷ _____ = _____ R _____

$$\begin{array}{r} 7 \text{ R } \_\_\_\_ \\ 16\overline{)122} \\ -\ \square \\ \hline \square \end{array}$$

The boy weighs _____ pounds _____ ounces.

Subtract the weight of the girl from the weight of the boy.

	_____	pounds	_____	ounces
−	6	pounds	4	ounces
	□	pound	□	ounces

So, the boy weighs _____ pound _____ ounces more than the girl.

Show and Grow

17. Which box of cereal weighs more? How much more?



$1\frac{1}{2}$ pounds



17 ounces

18. A male rhinoceros weighs $2\frac{1}{4}$ tons. Which rhinoceros weighs more? How much more? Write your answer as a fraction in simplest form.



Female rhinoceros: 3,500 lb

19. **DIG DEEPER!** Can all of the passengers listed in the table ride the boat at once? Explain.



Passenger Weights (pounds)			
191	184	150	248
170	215	132	145
265	126	259	175

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Name _____

Homework & Practice 11.4

Learning Target: Write weights using equivalent customary measures.

Example Convert 12,000 pounds to tons.

There are 2,000 pounds in 1 ton.

Because you are converting from a smaller unit to a larger unit, divide.

12,000 ÷ 2,000 = 6

So, 12,000 pounds is 6 tons.

Convert the weight.

1. 10 T = _____ lb

2. 32 oz = _____ lb

3. 48,000 lb = _____ T

4. 50 lb = _____ oz

5. $5\frac{3}{4}$ T = _____ lb

6. $8\frac{1}{2}$ lb = _____ oz

7. 168 oz = _____ lb _____ oz

8. 96,000 oz = _____ T

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Compare.

9. 16 lb ◯ 32,000 T

10. 128 oz ◯ $8\frac{1}{4}$ lb

11. 11 T ◯ 384,000 oz

12. A newborn puppy weighs 3 pounds 5 ounces. What is the weight of the puppy in ounces?

13. **Number Sense** How many tons are equal to 500 pounds? Write your answer as a fraction in simplest form.

Open-Ended Complete the statement.

14. _____ pounds > 72 ounces

15. 13 tons < _____ pounds

16. **Modeling Real Life** An employee at a juice cafe uses 10 ounces of kale and $\frac{3}{4}$ pound of apples to make a drink. Does the employee use more kale or apples? How much more?

17. **Modeling Real Life** You have a 3-pound bag of clay. You use 8 ounces of clay to make an ornament. How many ornaments can you make using all of the clay?



Review & Refresh

Find the product. Check whether your answer is reasonable.

18.
$$\begin{array}{r} 145 \\ \times\ 12 \\ \hline \end{array}$$

19.
$$\begin{array}{r} 561 \\ \times\ 87 \\ \hline \end{array}$$

20.
$$\begin{array}{r} 823 \\ \times\ 65 \\ \hline \end{array}$$

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Name _____

Capacity in Customary Units 11.5

Learning Target: Write capacities using equivalent customary measures.

Success Criteria:

- I can compare the sizes of two customary units of capacity.
- I can write a customary capacity using a smaller customary unit.
- I can write a customary capacity using a larger customary unit.

FLORIDA STANDARDS
MAFS.5.MD.1.1

Explore and Grow

Describe the relationship between cups and fluid ounces (fl oz). Then complete the table.



1 cup is _____ times as much as 1 fluid ounce.

Capacity (cups)	Capacity (fluid ounces)
1	
2	
3	
4	

MP **Structure** How can you convert cups to fluid ounces? How can you convert fluid ounces to cups?

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Think and Grow: Convert Customary Capacities

Key Idea When finding equivalent customary capacities, multiply to convert from a larger unit to a smaller unit. Divide to convert from a smaller unit to a larger unit.

Customary Units of Capacity
1 cup (c) = 8 **fluid ounces** (fl oz)
1 pint (pt) = 2 cups (c)
1 quart (qt) = 2 pints (pt)
1 gallon (gal) = 4 quarts (qt)

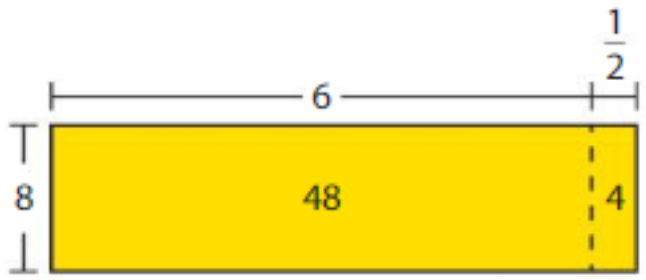
Example Convert $6\frac{1}{2}$ cups to fluid ounces.

There are _____ fluid ounces in 1 cup.

Because you are converting from a larger unit to a smaller unit, multiply.

$6\frac{1}{2} \times$ _____ = (6 × _____) + $\left(\frac{1}{2} \times \text{\_\_\_\_\_}\right)$

= _____



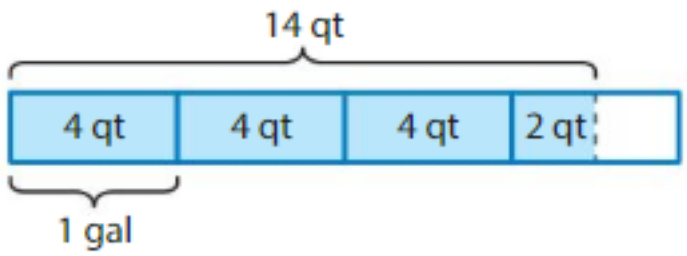
So, $6\frac{1}{2}$ cups is _____ fluid ounces.

Example Convert 14 quarts to gallons.

There are _____ quarts in 1 gallon.

Because you are converting from a smaller unit to a larger unit, divide.

14 ÷ _____ = $\frac{\square}{\square}$



So, 14 quarts is _____ gallons.

Show and Grow

Convert the capacity.

1. 9 gal = _____ qt

2. 20 pt = _____ c

3. 42 pt = _____ qt

4. 68 qt = _____ gal

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Name _____

Apply and Grow: Practice

Convert the capacity.

5. 7 c = _____ fl oz

6. 6 pt = _____ qt

7. 16 qt = _____ gal

8. 15 pt = _____ c

9. $2\frac{1}{4}$ c = _____ fl oz

10. 12 c = _____ qt

Compare.

11. 14 c ◯ 10 pt

12. 38 qt ◯ $8\frac{1}{2}$ gal

13. 4 gal ◯ 32 pt

14. You fill your turtle's aquarium with 40 pints of water. How many gallons of water do you use?



15. MP **Number Sense** Newton's water cooler contains $1\frac{1}{2}$ gallons of water. How many times can he fill his 16-fluid ounce canteen with water from the water cooler? Explain.

16. DIG DEEPER! Order the capacities from least to greatest. Explain how you converted the capacities.

$8\frac{1}{2}$ c	72 fl oz	$7\frac{3}{4}$ c	56 fl oz

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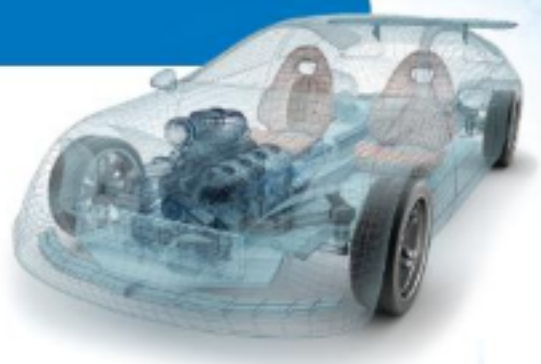
Think and Grow: Modeling Real Life



Example A car's engine contains $4\frac{1}{2}$ quarts of oil. Can a mechanic use a 24-cup container to drain all of the oil?

First, convert the quarts of oil to pints.

There are _____ pints in 1 quart.

$4\frac{1}{2} \times$ _____ $= (4 \times$ _____$) + \left(\frac{1}{2} \times$ _____$\right)$

$=$ _____ pints

You can also multiply $4\frac{1}{2}$ by the number of cups in 1 quart to find the answer.



Convert the pints of oil to cups.

There are _____ cups in 1 pint.

$9 \times$ _____ $=$ _____ cups

Compare the cups of oil to the capacity of the container.

_____ ◯ 24

So, the mechanic _____ use the container to drain all of the oil.

Show and Grow

17. An adult has 192 fluid ounces of blood in his body. How many pints of blood are in his body?

18. You make $4\frac{1}{2}$ cups of soup. One serving is 12 fluid ounces. How many servings of soup do you make?



19. **DIG DEEPER!** A scientist has two beakers of a solution, one containing 5 cups and the other containing $1\frac{1}{2}$ pints. How many gallons of the solution does the scientist have? Write your answer as a fraction in simplest form.

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Name _____

Homework & Practice 11.5

Learning Target: Write capacities using equivalent customary measures.

Example Convert 20 pints to quarts.

There are 2 pints in 1 quart.

Because you are converting from a smaller unit to a larger unit, divide.

20 ÷ 2 = 10

So, 20 pints is 10 quarts.

Convert the capacity.

1. 9 pt = _____ c

2. 72 fl oz = _____ c

3. 6 c = _____ fl oz

4. $3\frac{3}{4}$ gal = _____ qt

5. $5\frac{1}{2}$ qt = _____ pt

6. 40 pt = _____ gal

7. 64 qt = _____ c

8. 112 fl oz = _____ pt

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Compare.

9. 48 qt ◯ 12 gal

10. 24 fl oz ◯ $3\frac{1}{4}$ c

11. 10 qt ◯ 24 c

12. You buy 2 gallons of apple cider. How many cups of apple cider do you buy?

13. MP **Logic** Your friend makes a table of equivalent capacities. Write two pairs of customary units represented by the chart.

_____	_____
1	4
2	8
3	12
4	16

14. DIG DEEPER! Which measurements are greater than 16 pints?

300 fluid ounces	28 cups	10 quarts
1 gallon	275 fluid ounces	35 cups

15. **Modeling Real Life** Your friend buys 8 quarts of frozen yogurt. How many cups of frozen yogurt does she buy?

16. **Modeling Real Life** A recipe calls for $2\frac{1}{4}$ cups of milk. You want to make 2 batches of the recipe. Should you buy a pint, quart, or half gallon of milk?

Review & Refresh

Find the product.

17. $0.5 \times 0.7 =$ _____

18. $46.2 \times 0.68 =$ _____

19. $1.4 \times 0.3 =$ _____

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Name _____

Make and Interpret Line Plots

11.6

Learning Target: Make line plots and use them to solve problems.

Success Criteria:

- I can make a line plot.
- I can interpret a line plot.
- I can use a line plot to solve a real-life problem.

FLORIDA STANDARDS

MAFS.5.MD.2.2

Explore and Grow

Measure and record your height to the nearest quarter of a foot. Collect the heights of all the students in your class and create a line plot of the results.





MP **Construct Arguments** Make two conclusions from the line plot.

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Think and Grow: Make Line Plots

Amounts of Water (cup)				
$\frac{7}{8}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{5}{8}$
$\frac{1}{4}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{3}{8}$

Example The table shows the amounts of water that 10 students use for a science experiment. Make a line plot to display the data. How many students use more than $\frac{1}{2}$ cup?

Step 1: Write the data values as fractions with a common denominator.

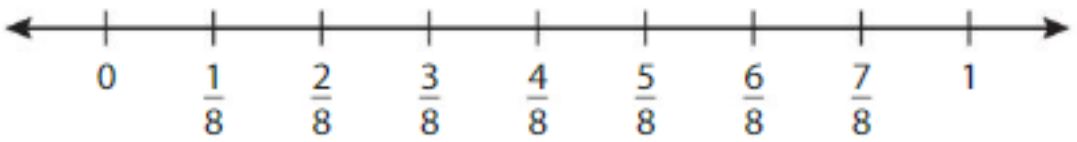
The denominators of the data values are 2, 4, and 8. Because 2 and 4 are factors of 8, use a denominator of 8.

$\frac{1}{2} = \frac{1 \times 4}{2 \times 4} = \frac{\square}{\square}$ $\quad \frac{1}{4} = \frac{1 \times 2}{4 \times 2} = \frac{\square}{\square}$ $\quad \frac{3}{4} = \frac{3 \times 2}{4 \times 2} = \frac{\square}{\square}$

Step 2: Use a scale on a number line that shows all of the data values.

Step 3: Mark an X for each data value.

Water Amounts for Science Experiments



Amount of water (cup)

Remember: When making a line plot, write a title and label the scale.



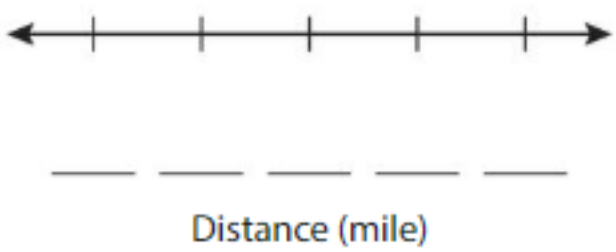
There are _____ students who use more than $\frac{1}{2}$ cup.

Show and Grow

1. The table shows the distance your friend swims each day for 10 days. Make a line plot to display the data.

Swimming Distances (mile)				
$\frac{5}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$
$\frac{3}{8}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{7}{8}$	$\frac{3}{4}$

Swimming Distances



Distance (mile)

How many days does your friend swim $\frac{3}{4}$ mile or more?

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Name _____

Apply and Grow: Practice

2. The table shows the amounts of mulch a landscaping company orders on 10 different days. Make a line plot to display the data.

Amounts of Mulch (ton)				
$\frac{1}{4}$	$\frac{7}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{7}{8}$
$\frac{7}{8}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{7}{8}$	$\frac{1}{2}$

Mulch Amounts for Landscaping



Amount of mulch (ton)

On how many days did the landscaping company use more than $\frac{1}{2}$ ton of mulch?

What do you notice about the data?

3. **DIG DEEPER!** Your teacher has the three packages of seeds shown. She divides the first package into bags weighing $\frac{1}{2}$ ounce each. She divides the second package into bags weighing $\frac{1}{4}$ ounce each. She divides the third package into bags weighing $\frac{1}{8}$ ounce each. Find the total number of bags of seeds. Use a line plot to display the results.



2 ounces

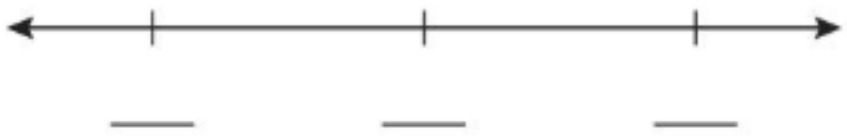


2 ounces



2 ounces

Bag Weights



Weight of bag (ounces)

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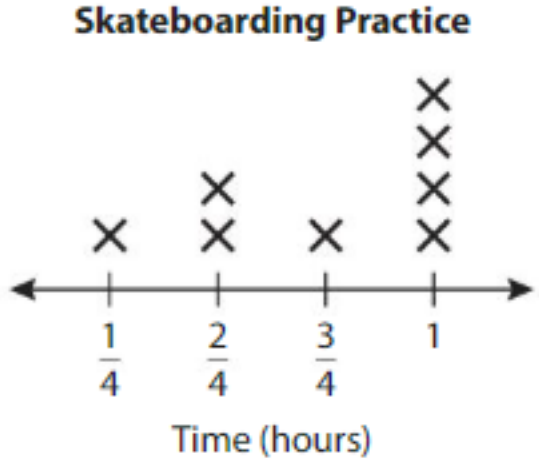
Think and Grow: Modeling Real Life

Example You record the amounts of time you skateboard each day for 8 days. Your friend skateboards the same total amount of time, but for an equal number of hours each day. How long does your friend skateboard each day?



Step 1: You and your friend skateboard the same total amount of time. Use the line graph to find the number of hours you each skateboard.

$\frac{1}{4} + \left(2 \times \frac{2}{4}\right) + \frac{3}{4} + (4 \times 1) = \frac{1}{4} + \_\_\_\_ + \frac{3}{4} + \_\_\_\_$ Multiply.

$= \frac{1}{4} + \frac{3}{4} + \_\_\_\_ + \_\_\_\_$ Commutative Property of Addition

$= \frac{1}{4} + \frac{3}{4} + (\_\_\_\_ + \_\_\_\_)$ Associative Property of Addition

$= \_\_\_\_ + \_\_\_\_$ Add.

$= \_\_\_\_$ Add.

So, you each skateboard for _____ hours.

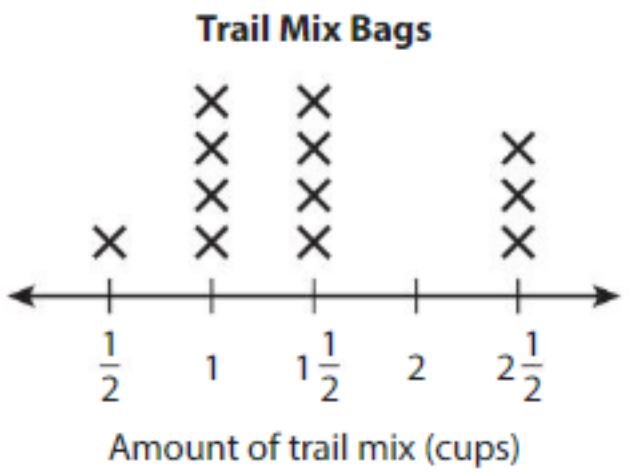
Step 2: Divide the number of hours by the number of days.

$\_\_\_\_ \div \_\_\_\_ = \frac{\square}{\square}$

So, your friend skateboards for _____ hour each day.

Show and Grow

4. You record the amounts of trail mix you pour into 12 bags. Your friend has the same total amount of trail mix, but equally divides it among 12 bags. How much trail mix does your friend pour into each bag?



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Name _____

Homework & Practice 11.6

Learning Target: Make line plots and use them to solve problems.

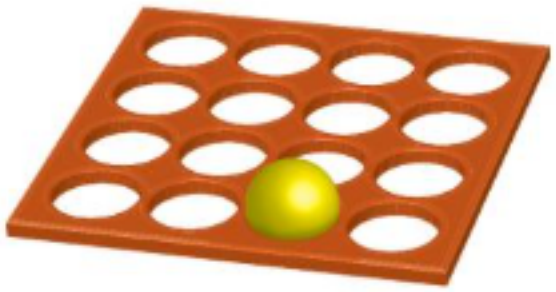
Example The table shows the amounts of time that 10 students take to land three balls in a row in a game. Make a line plot to display the data. How many students take less than $\frac{3}{4}$ minute?

Amounts of Time (minute)				
$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{3}{4}$
$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{1}{2}$

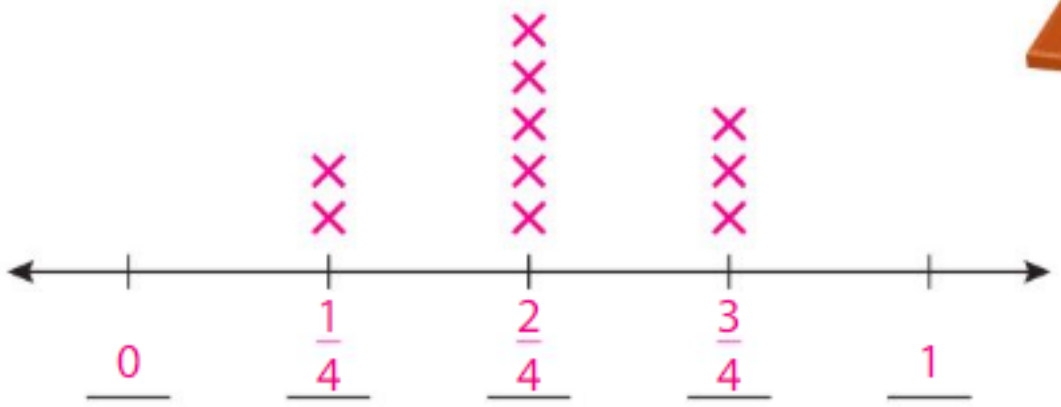
Step 1: Write the data values as fractions with a common denominator.

Step 2: Use a scale on a number line that shows all of the data values.

Step 3: Mark an X for each data value.



Completion Times



Amount of time (minute)

There are 7 students who take less than $\frac{3}{4}$ minute.

1. The table shows the weights of 10 newborn pygmy marmosets. Make a line plot to display the data. How many pygmy marmosets weigh more than $\frac{1}{2}$ ounce?

Weights (ounce)				
$\frac{1}{2}$	$\frac{5}{8}$	$\frac{7}{8}$	$\frac{3}{4}$	$\frac{7}{8}$
$\frac{7}{8}$	$\frac{3}{4}$	$\frac{5}{8}$	$\frac{7}{8}$	$\frac{3}{4}$

Pygmy Marmoset Weights



Weight (ounce)



The pygmy marmoset is the world's smallest species of monkey.

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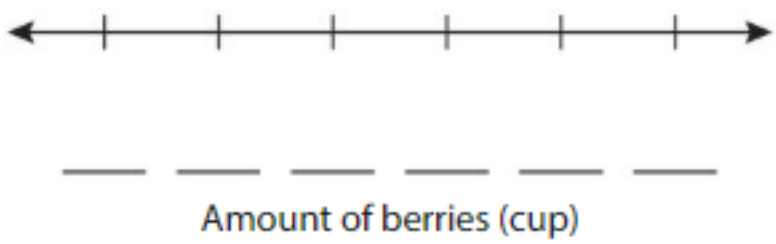
Use the table.

2. The table shows the amounts of berries required to make 10 different smoothie recipes. Make a line plot to display the data.

Berries (cup)									
$\frac{3}{4}$	$\frac{1}{2}$	$\frac{1}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{1}{4}$

Berry Amounts for Smoothies



Amount of berries (cup)

What is the most common amount of berries required?

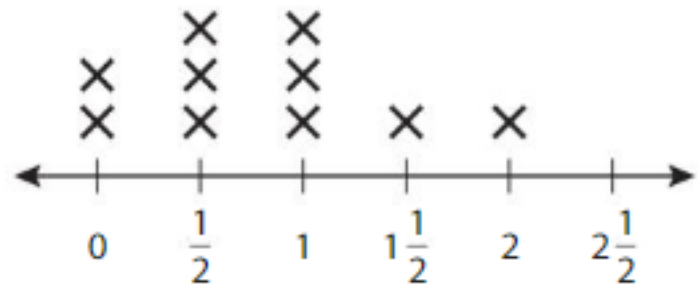
How many times as many recipes use $\frac{3}{4}$ cup of berries as $\frac{1}{4}$ cup of berries?

3. DIG DEEPER! How many total cups of berries are needed to make one of each smoothie?

Use the line plot.

4. **Modeling Real Life** The line plot shows the number of miles you run each day for 10 days. Your friend runs the same total number of miles, but runs an equal number of miles each day. How far does your friend run each day?

Running Distances



Distance (miles)

5. DIG DEEPER! Your cousin runs a total amount that is 6 times as far as your friend runs in one day. How far does your cousin run?

Review & Refresh

Divide. Then check your answer.

6. 561 ÷ 7 = _____

7. 3,029 ÷ 4 = _____

8. 2,814 ÷ 9 = _____

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Name _____

Units of Time 11.7

Learning Target: Write amounts of time using equivalent measures.

Success Criteria:

- I can compare the sizes of two units of time.
- I can write amounts of time using smaller units.
- I can write amounts of time using larger units.

FLORIDA STANDARDS
MAFS.5.MD.1.1

Explore and Grow

Use a clock or a stopwatch to help you complete each statement.



1 minute is _____ times as long as 1 second.

1 hour is _____ times as long as 1 minute.



1 hour is _____ times as long as 1 second.

MP **Reasoning** How can you convert a time from a larger unit to a smaller unit? from a smaller unit to a larger unit?

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Think and Grow: Convert Amounts of Time

Key Idea When finding equivalent amounts of time, multiply to convert from a larger unit to a smaller unit. Divide to convert from a smaller unit to a larger unit.

Units of Time	
1 minute (min) = 60 seconds (sec)	1 week (wk) = 7 days (d)
1 hour (h) = 60 minutes (min)	1 year (yr) = 12 months (mo)
1 day (d) = 24 hours (h)	1 year (yr) = 52 weeks (wk)

Example Convert $3\frac{1}{2}$ minutes to seconds.

There are _____ seconds in 1 minute.

Because you are converting from a larger unit to a smaller unit, multiply.

$3\frac{1}{2} \times$ _____ $= (3 \times$ _____$) + \left(\frac{1}{2} \times \text{_____}\right)$

$=$ _____

So, $3\frac{1}{2}$ minutes is _____ seconds.

Example Convert 180 hours to days.

There are _____ hours in 1 day.

Because you are converting from a smaller unit to a larger unit, divide.

$$\begin{array}{r} 7 \text{ R } \square \\ 24\overline{)180} \\ -\ \square \\ \hline \square \end{array}$$

remainder → □
divisor → □

You could also write the time as 7 days 12 hours.

So, 180 hours is _____ days.



Show and Grow

Convert the time.

1. $5\frac{1}{4}$ h = _____ min

2. 42 mo = _____ yr

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Name _____

Apply and Grow: Practice

Convert the time.

3. $4\frac{3}{4}$ min = _____ sec

4. 84 d = _____ wk

5. 130 wk = _____ yr

6. $5\frac{1}{2}$ d = _____ h

7. 257 min = _____ h _____ min

8. 3 h = _____ sec

Compare.

9. 400 sec ◯ $6\frac{1}{2}$ min

10. 5 yr 5 mo ◯ 65 mo

11. 312 h ◯ 2 wk

12. A song is 225 seconds long. How many minutes long is the song?



13. **Which One Doesn't Belong?** Which amount of time does *not* belong with the other three? Explain.

8 h 23 min	503 min
500 min 3 sec	30,180 sec

14. DIG DEEPER! Describe two different ways to convert days to minutes.

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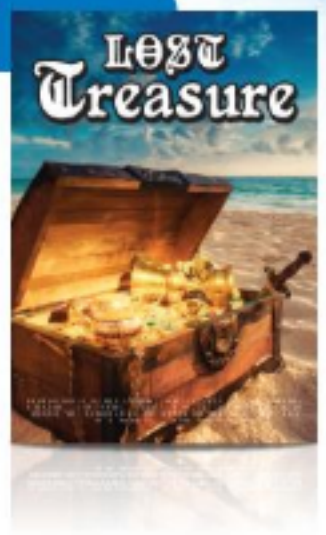
Think and Grow: Modeling Real Life



Example A movie is 142 minutes long. You start the movie at 11:45 A.M. At what time does the movie end?

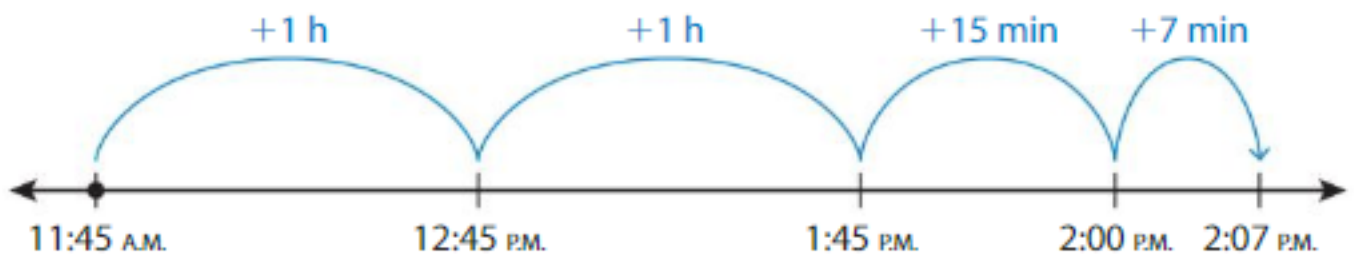
Convert 142 minutes to hours and minutes, then use a number line to find the time the movie ends.

There are _____ minutes in 1 hour.

Because you are converting from a smaller unit to a larger unit, divide.

$$\begin{array}{r} 2\ R\ \_\_\_\_ \\ 60\overline{)142} \\ -\ \square \\ \hline \square \end{array}$$

The movie is _____ hours and _____ minutes long.



So, the movie ends at _____.

Show and Grow

15. A rocket launches and helps send a car into orbit. The rocket lands 488 seconds after liftoff. Liftoff is at 3:55 P.M. At what time does the rocket land?



16. **DIG DEEPER!** During hibernation, a bear breathes about 80 times every hour. About how many seconds pass between each breath? Explain your reasoning.

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Name _____

Homework & Practice 11.7

Learning Target: Write amounts of time using equivalent measures.

Example Convert 150 seconds to minutes.

There are 60 seconds in 1 minute.

Because you are converting from a smaller unit to a larger unit, divide.

$$\begin{array}{r} 2 \text{ R } 30 \\ 60\overline{)150} \\ -\ 120 \\ \hline 30 \end{array}$$

remainder / divisor → $\frac{30}{60}$

So, 150 seconds is $2\frac{30}{60}$, or $2\frac{1}{2}$ minutes.

Convert the time.

1. 4 wk = _____ d

2. 300 min = _____ h

3. 54 mo = _____ yr

4. $2\frac{1}{4}$ yr = _____ wk

5. $3\frac{1}{3}$ h = _____ min

6. 45 d = _____ wk _____ d

7. $7\frac{3}{4}$ yr = _____ mo

8. 7,200 sec = _____ h

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Compare.

9. $5\frac{1}{4}$ yr ◯ 260 wk

10. 78 h ◯ 2 d 6 h

11. $4\frac{1}{2}$ d ◯ 7,500 min

12. A summer camp is in session for 8 weeks. How many days is the camp in session?

13. **Logic** Your friend makes a table of equivalent amounts of time. Write two pairs of units of time represented by the chart.

_____	_____
1	60
2	120
3	180
4	240

14. **Number Sense** Convert 45 minutes to hours. Write your answer as a fraction in simplest form.

15. **Modeling Real Life** You wait in line to ride a roller coaster for 86 minutes. You get in line at 10:19 A.M. At what time do you board the roller coaster?



16. **DIG DEEPER!** One day on Venus is equal to 243 days on Earth. How many more minutes are in 1 day on Venus than 1 day on Earth? Explain.

Review & Refresh

Use mental math to find the sum or difference.

17. 3.75 + 7.3 + 2.25 = _____

18. 13.2 − 9.3 = _____

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Name _____

Problem Solving: Measurement 11.8

Learning Target: Solve multi-step word problems involving units of measure.

Success Criteria:

- I can understand a problem.
- I can make a plan to solve.
- I can solve a problem.

FLORIDA STANDARDS

MAFS.5.MD.1.1
MAFS.5.MD.2.2

Explore and Grow

Make a plan to solve the problem.



A fruit vendor sells fruit by the pound. You have a tote that can hold up to 4 pounds. A bag of oranges weighs $2\frac{1}{4}$ pounds. A bag of apples weighs 28 ounces. Can your tote hold both bags of fruit? Explain.

MP **Precision** Which bag of fruit is heavier? Explain.

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Think and Grow: Problem Solving: Measurement



Example A recipe calls for $2\frac{1}{4}$ cups of milk. You have $\frac{1}{4}$ pint of whole milk and $1\frac{1}{2}$ cups of skim milk. Do you have enough milk for the recipe?

Understand the Problem

What do you know?

- The recipe calls for $2\frac{1}{4}$ cups of milk.
- You have $\frac{1}{4}$ pint of whole milk and $1\frac{1}{2}$ cups of skim milk.

What do you need to find?

- You need to find whether you have enough milk for the recipe.

Make a Plan

How will you solve?

- Convert $\frac{1}{4}$ pint of whole milk to cups.
- Add the amounts of whole milk and skim milk.
- Compare the amount of milk you have to the amount needed.

Solve

Step 1: Convert $\frac{1}{4}$ pint to cups.

There are _____ cups in 1 pint.

$\frac{1}{4} \times$ _____ = _____

You have _____ cup of whole milk.

Step 2: Add the amounts of whole milk and skim milk.

You have _____ cup of whole milk and _____ cups of skim milk.

_____ + _____ = _____

You have _____ cups of milk.

Compare: _____ cups ◯ $2\frac{1}{4}$ cups

So, you _____ have enough milk for the recipe.

Show and Grow

1. Explain how you can check whether the answer above is reasonable.

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Name _____

Apply and Grow: Practice

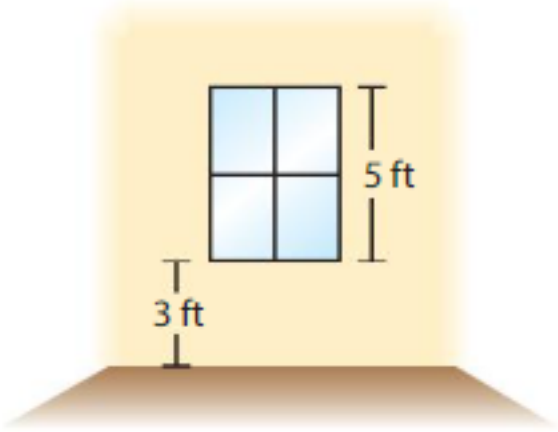
Understand the problem. What do you know? What do you need to find? Explain.

2. Your friend buys 1 pound of walnuts, 6 ounces of peanuts, and $\frac{1}{2}$ pound of cashews. How many ounces do the nuts weigh in all?

3. A bottle of orange juice contains 64 fluid ounces. How many cups of orange juice are in 3 bottles?

Understand the problem. Then make a plan. How will you solve? Explain.

4. Your friend wants to buy curtains that hang from the top of the window to the floor. Curtain lengths are typically measured in inches. What length curtains should he buy?



5. Your friend runs a total distance of 1 kilometer at track practice by running 100-meter hurdles. How many times does he run the hurdles?

6. A trailer can carry $13\frac{1}{2}$ tons. It has room to carry 6 cars at once. Can the trailer carry 6 cars that each weigh 3,800 pounds? Explain.

7. DIG DEEPER! You walk your dog 4 laps around the block each day. Each block is 400 meters. How many total kilometers do you walk your dog around the block after 35 weeks?

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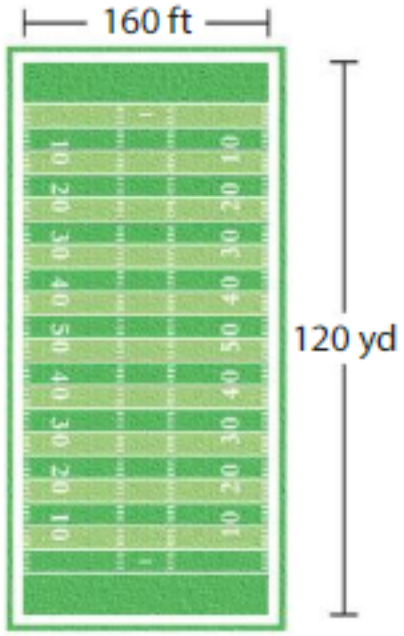
Think and Grow: Modeling Real Life

Example A crew member needs to put a temporary fence around the perimeter of the rectangular football field. How many feet of temporary fencing does the crew member need?



Think: What do you know? What do you need to find? How will you solve?

Step 1: Convert the length of the field to feet.

There are _____ feet in 1 yard.

120 × _____ = _____

The length of the field is _____ feet.

Step 2: Use a formula to find the perimeter of the field.

$P = (2 \times \ell) + (2 \times w)$

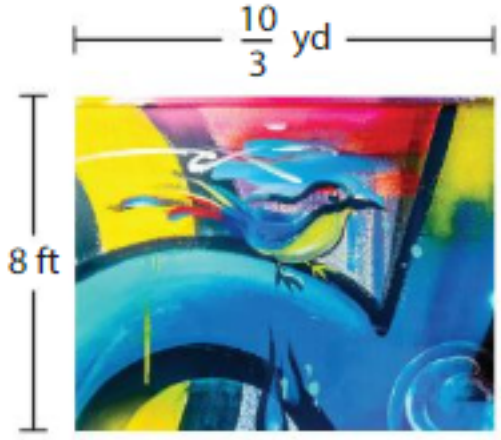
= (2 × _____) + (2 × _____)

= _____ + _____

= _____ So, the crew member needs _____ feet of temporary fencing.

Show and Grow

8. An artist puts a wood border around the perimeter of the rectangular mural. How many feet of wood does the artist need?



9. **DIG DEEPER!** The sports jug contains 5 gallons of water. The paper cup holds 8 fluid ounces of water. How many paper cups can 3 sports jugs fill? Justify your answer.



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Name _____

Homework & Practice 11.8

Learning Target: Solve multi-step word problems involving units of measure.

Example Descartes eats $2\frac{1}{4}$ pounds of food each week. He buys his food in 6-ounce cans. How many cans should he buy so that he has enough food for the week?

Think: What do you know? What do you need to find? How will you solve?

Step 1: Convert $2\frac{1}{4}$ pounds to ounces to find how many ounces of food Descartes eats each week.

There are 16 ounces in 1 pound.

$2\frac{1}{4} \times$ 16 = 36

Descartes eats 36 ounces of food each week.

Step 2: Find how many 6-ounce cans he should buy.

36 ÷ 6 = 6

He should buy 6 cans.

Descartes should buy 6 cans so that he has enough food for the week.

Understand the problem. Then make a plan. How will you solve? Explain.

1. A robotic insect has a mass of 80 milligrams. The mass of a quarter is 5.67 grams. How many more grams is the mass of a quarter than the mass of the robotic insect?



2. Newton pours water out of a filled 2-liter beaker. Now it only has 1,025 milliliters of water in it. How many milliliters of water did Newton pour out?

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3. You run 5 laps around a track. Each lap is 400 meters. How many total kilometers do you run?

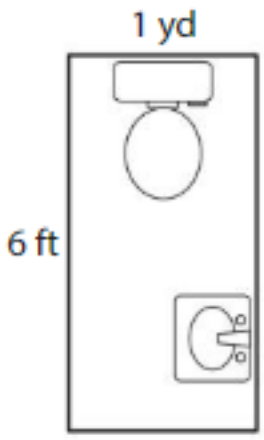
4. Two hotel workers have a total of 30 bags of luggage each weighing 50 pounds. One worker weighs 150 pounds, and the other weighs 210 pounds. Can they transfer themselves and all of the bags in the elevator at once? Explain.



5. **DIG DEEPER!** You have 84 feet of streamers. You cut 24 pieces that are each $\frac{1}{2}$ yard long. How many feet of streamers do you have left?

6. **Writing** Write and solve a two-step word problem involving units of measure.

7. **Modeling Real Life** You want to hang a wallpaper border around the perimeter of the rectangular bathroom shown. How many yards of wallpaper border do you need?



8. **DIG DEEPER!** You need $\frac{1}{2}$ gallon of fertilizer to cover a lawn. What is the least amount of money that you can pay and have enough fertilizer?



128 fluid ounces
$40



16 fluid ounces
$11

Review & Refresh

Divide. Then check your answer.

9. $25\overline{)5{,}343}$

10. $24\overline{)2{,}064}$

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Name _____

Performance Task 11

Passenger airliners come in many different sizes. Plane A and Plane B are two different types of wide-body jet airliners.



Plane A

1. The table shows some facts about Plane A.

Plane A	
Length	250 ft 2 in.
Wingspan	224 ft 7 in.
Maximum takeoff weight	493.5 tons

a. The length of Plane B is 80 yards. Which is longer, Plane A or Plane B? How much longer?

b. The wingspan of Plane B is $37\frac{1}{12}$ feet longer than the wingspan of the Plane A. What is the wingspan of Plane B?

2. Before an airliner can take off, the pilot has to make sure it weighs less than the maximum takeoff weight.

a. Plane A weighs 404,600 pounds and can carry at most 422,000 pounds of fuel. How many pounds can the airliner hold in passengers and cargo?

b. The maximum landing weight of Plane A is 300,000 pounds less than the maximum takeoff weight. Why does an airliner weigh less at the end of a flight than at the beginning?

c. Plane A uses 20 quarts of fuel for each mile it flies. How many gallons of fuel does the plane use during a 3,200-mile flight?

Plane B



3. Plane B can hold 544 passengers. Plane A can hold $\frac{3}{4}$ of passengers that Plane B can hold.

a. How many passengers can Plane A hold?

b. An airline estimates that each passenger weighs about 200 pounds, including carry-on baggage. How much passenger and carry-on weight does the airline estimate for Plane B?

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Surround and Capture

Directions:

1. Players take turns.
2. On your turn, place a counter on a yellow hexagon.
3. Solve for the missing measurement and cover the answer with another counter. If you surround a monster, then put a counter on the monster. If you do not surround a monster, then your turn is over.
4. Continue playing until all measurements are covered.
5. The player who captures the most monsters wins!



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Name _____

Chapter Practice 11

11.1 Length in Metric Units

Convert the length.

1. 4 cm = _____ mm

2. 81 m = _____ cm

3. 0.56 km = _____ cm

4. 9 mm = _____ m

Compare.

5. 73 m ◯ 7.3 km

6. 0.6 cm ◯ 0.06 m

7. 2 mm ◯ 0.2 cm

11.2 Mass and Capacity in Metric Units

Convert the mass.

8. 3 kg = _____ g

9. 0.006 g = _____ mg

10. 70 g = _____ kg

11. 29,000 mg = _____ kg

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Convert the capacity.

12. 400 mL = _____ L

13. 10 L = _____ mL

14. 7 mL = _____ L

15. 0.65 L = _____ mL

11.3 Length in Customary Units

Convert the length.

16. 2 mi = _____ yd

17. $14\frac{2}{3}$ yd = _____ ft

18. 103 in. = _____ ft _____ in.

19. 2,340 in. = _____ yd

Compare.

20. $5\frac{2}{3}$ yd ◯ 17 ft

21. 67 in. ◯ 5 ft 10 in.

22. 16 mi ◯ 84,000 ft

11.4 Weight in Customary Units

Convert the weight.

23. $4\frac{1}{2}$ T = _____ lb

24. 100,000 lb = _____ T

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Convert the weight.

25. 217 oz = _____ lb _____ oz

26. 956 oz = _____ lb

Compare.

27. $5\frac{1}{4}$ T ◯ 15,000 lb

28. 258 oz ◯ 17 lb 12 oz

29. 192,000 oz ◯ 7 T

30. MP **Number Sense** Which measurements are equivalent to 52 ounces?

3 lb 2 oz $3\frac{1}{4}$ lb 3 lb 4 oz $3\frac{1}{2}$ lb

11.5 Capacity in Customary Units

Convert the capacity.

31. 18 qt = _____ pt

32. $4\frac{3}{4}$ c = _____ fl oz

33. 72 pt = _____ gal

34. 81 qt = _____ gal

Compare.

35. $5\frac{1}{4}$ gal ◯ 21 qt

36. $3\frac{1}{2}$ pt ◯ 9 c

37. 4 qt ◯ 20 c

38. **Modeling Real Life** You have $2\frac{1}{4}$ gallons of apple juice. How many pints of apple juice do you have?



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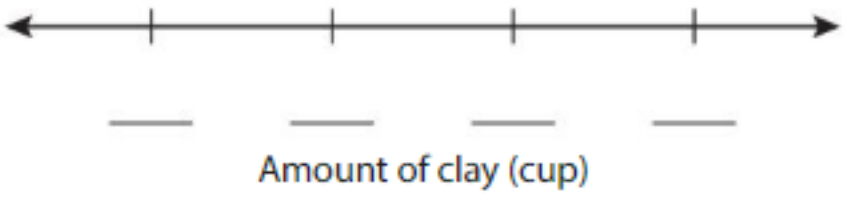
11.6 Make and Interpret Line Plots

39. The table shows the amounts of clay made by 10 students. Make a line plot to display the data.

Amounts of Clay (cup)				
$\frac{1}{2}$	$\frac{5}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$
$\frac{5}{8}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{7}{8}$	$\frac{3}{4}$

Clay Amounts Made



Amount of clay (cup)



How many students made more than $\frac{3}{4}$ cup of clay?

What is the most common amount of clay made?

11.7 Units of Time

Convert the time.

40. $3\frac{1}{2}$ d = _____ h

41. 465 sec = _____ min

42. 110 wk = _____ yr _____ wk

43. 3 d = _____ min

11.8 Problem Solving: Measurement

44. A recipe calls for $2\frac{3}{4}$ cups of fava beans. You have a $1\frac{1}{4}$-pint can of fava beans and $\frac{1}{2}$ cup of cooked fava beans. Do you have enough fava beans for the recipe?



Ful mudammas, a popular dish in Egypt, contains fava beans.

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Name _____

Cumulative Practice 1–11

1. Your friend estimates that a bookcase is $2\frac{1}{2}$ feet wide. The actual width is $\frac{2}{3}$ foot longer. What is the width of the bookcase?

Ⓐ $1\frac{1}{6}$ feet

Ⓑ $1\frac{5}{6}$ feet

Ⓒ $2\frac{3}{5}$ feet

Ⓓ $3\frac{1}{6}$ feet

---

2. What is the product of 845 and 237?

Ⓐ 10,140

Ⓑ 32,955

Ⓒ 200,265

Ⓓ 4,655,985

---

3. How many milliliters are equal to 0.6 liter?

Ⓐ 0.006 mL

Ⓑ 0.06 mL

Ⓒ 60 mL

Ⓓ 600 mL

---

4. Which are equivalent to $6 \times \frac{3}{10}$?

☐ $\frac{3}{10} \times \frac{3}{10} \times \frac{3}{10} \times \frac{3}{10} \times \frac{3}{10} \times \frac{3}{10}$

☐ $1\frac{4}{5}$

☐ $1\frac{8}{10}$

☐ $\frac{9}{10}$

☐ $18 \times \frac{1}{10}$

☐ $6 \times \frac{1}{3} \times \frac{1}{10}$

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5. To find $34 + (16 + 23)$, your friend adds 34 and 16. Then she adds 23 to the sum. Which property did she use?

Ⓐ Addition Property of Zero

Ⓑ Associative Property of Addition

Ⓒ Commutative Property of Addition

Ⓓ Distributive Property

---

6. An Eastern Hognose Snake is $2\frac{1}{2}$ feet long. It grows another foot. What is the new length of the snake in inches?



Ⓐ 18 inches

Ⓑ 30 inches

Ⓒ 36 inches

Ⓓ 42 inches

---

7. What common factor should you divide the numerator and denominator of $\frac{16}{24}$ by so that it is in simplest form?

Ⓐ 2

Ⓑ 4

Ⓒ 8

Ⓓ 16

---

8. A salesperson at a fabric store has 30 yards of fabric. He puts the same number of yards of fabric on each of 4 rolls for a display. How many yards of fabric does the salesperson put on each roll?

Ⓐ $\frac{4}{30}$ yard

Ⓑ $\frac{2}{15}$ yard

Ⓒ 7 yards

Ⓓ $7\frac{1}{2}$ yards

---

9. Descartes estimates 96.3×42 by rounding each number to the nearest ten. What is Descartes's estimate?

Ⓐ 400

Ⓑ 3,600

Ⓒ 3,840

Ⓓ 4,000

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10. The fifth-grade classes are making a mural to hang in the front hallway of the school.

Think
Solve
Explain

Part A Each class creates a square for the mural that has side lengths of $\frac{1}{2}$ meter. What is the area of each square?

Part B There are 12 classes. What is the area of the entire mural? Explain.

11. Which expressions have a quotient of 4.6?

- ☐ 124.2 ÷ 27
- ☐ 55.2 ÷ 12
- ☐ 15.64 ÷ 34
- ☐ 82.8 ÷ 18

12. What is the quotient of 5 and $\frac{1}{8}$?



13. You need thirty 5-foot pieces of string for a project. A store sells string by the yard. How many yards of string will you need to buy?

- Ⓐ 1 yard
- Ⓑ 50 yards
- Ⓒ 150 yards
- Ⓓ 450 yards



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14. In which equations does $k = \frac{3}{4}$?

- ☐ $k \times \frac{1}{5} = \frac{3}{20}$
- ☐ $\frac{5}{6} \times k = \frac{5}{8}$
- ☐ $\frac{2}{2} \times \frac{1}{2} = k$
- ☐ $\frac{3}{6} \times \frac{3}{2} = k$

---

15. Newton brings 3 bags of popcorn that are all the same size to a club. There are 12 people at the club. Each person eats the same amount of popcorn and all of the popcorn is eaten. What fraction of a bag of popcorn does each person eat?



- Ⓐ $\frac{1}{4}$
- Ⓑ $\frac{12}{3}$
- Ⓒ 4
- Ⓓ 36

---

16. Evaluate $25.4 - 16.31 + 4.59$.

- Ⓐ 4.5
- Ⓑ 13.68
- Ⓒ 13.70
- Ⓓ 15.70

---

17. What is the sum of $\frac{5}{6}$ and $\frac{1}{4}$?

- Ⓐ $\frac{1}{4}$
- Ⓑ $\frac{7}{12}$
- Ⓒ $\frac{3}{5}$
- Ⓓ $1\frac{1}{12}$

---

18. What is 40,071 written in word form?

- Ⓐ four hundred seventy-one
- Ⓑ four thousand, seventy-one
- Ⓒ forty thousand, seventy-one
- Ⓓ forty thousand, seven hundred ten

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Name _____

STEAM Performance Task 1–11



Sound is created from vibrations in the air called sound waves. In music, when you hear different pitches, it is because the sound waves are traveling at different speeds. The frequency of a pitch measures the number of sound waves per second. Higher pitches have higher frequencies, and lower pitches have lower frequencies. Frequencies are measured in Hertz.

1. A_4 is the musical note commonly used to tune instruments. The frequency of A_4 is 440 Hertz, because the sound vibrates 440 times per second.

a. The frequency of A_3 is $\frac{1}{2}$ the frequency of A_4. The frequency of A_2 is $\frac{1}{2}$ the frequency of A_3. What is the frequency of A_2?

b. Is the pitch of A_2 higher or lower than the pitch of A_4? Explain.

c. How can you use the frequency of A_4 to find the frequency of A_5? Explain.

d. The frequency of B_4 is 493.88 Hertz. What is the frequency of B_3?

e. A computer software program can correct the frequency of a sound so it has perfect pitch. A violin plays a note that has a frequency of 255.1 Hertz. Explain how to change the frequency so it has the pitch of B_3.

2. Use the Internet or some other resource to learn about how audio processors can help to correct a singer's pitch, or to alter the way a song sounds. Write one interesting thing you learn.

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3. You borrow a guitar to learn how to play. Use the table to decide which guitar you should borrow.

	Guitar A	Guitar B
Length	37 inches	40 inches
Weight	$7\frac{5}{16}$ pounds	176 ounces

a. Based on your height, you need a guitar that is close to 1 yard long. Which guitar is closer?

b. You also need a guitar that is close to 8 pounds. Which guitar do you think you should borrow? Explain.

c. Guitar B is called a full-size guitar and Guitar A is called a $\frac{7}{8}$-size guitar. Is the length of Guitar A $\frac{7}{8}$ the length of Guitar B? Explain.

d. The scale length on a guitar affects the pitch. To find the scale length of a guitar, multiply the distance between the nut and the 12th fret by 2. On your guitar, that distance is $12\frac{3}{4}$ inches. What is the scale length of your guitar?



e. The strings on your guitar are $\frac{3}{8}$ inch longer than the scale length to allow you to tune the strings to the correct pitch. What are the string lengths on your guitar?

f. When you tune a string, you adjust it tighter to make the pitch higher, or looser to make the pitch lower. You use a tuning instrument to help you tune your guitar. It says that your A_4 string has a frequency of 436.2 Hertz. How should you adjust the string to get the pitch in tune?

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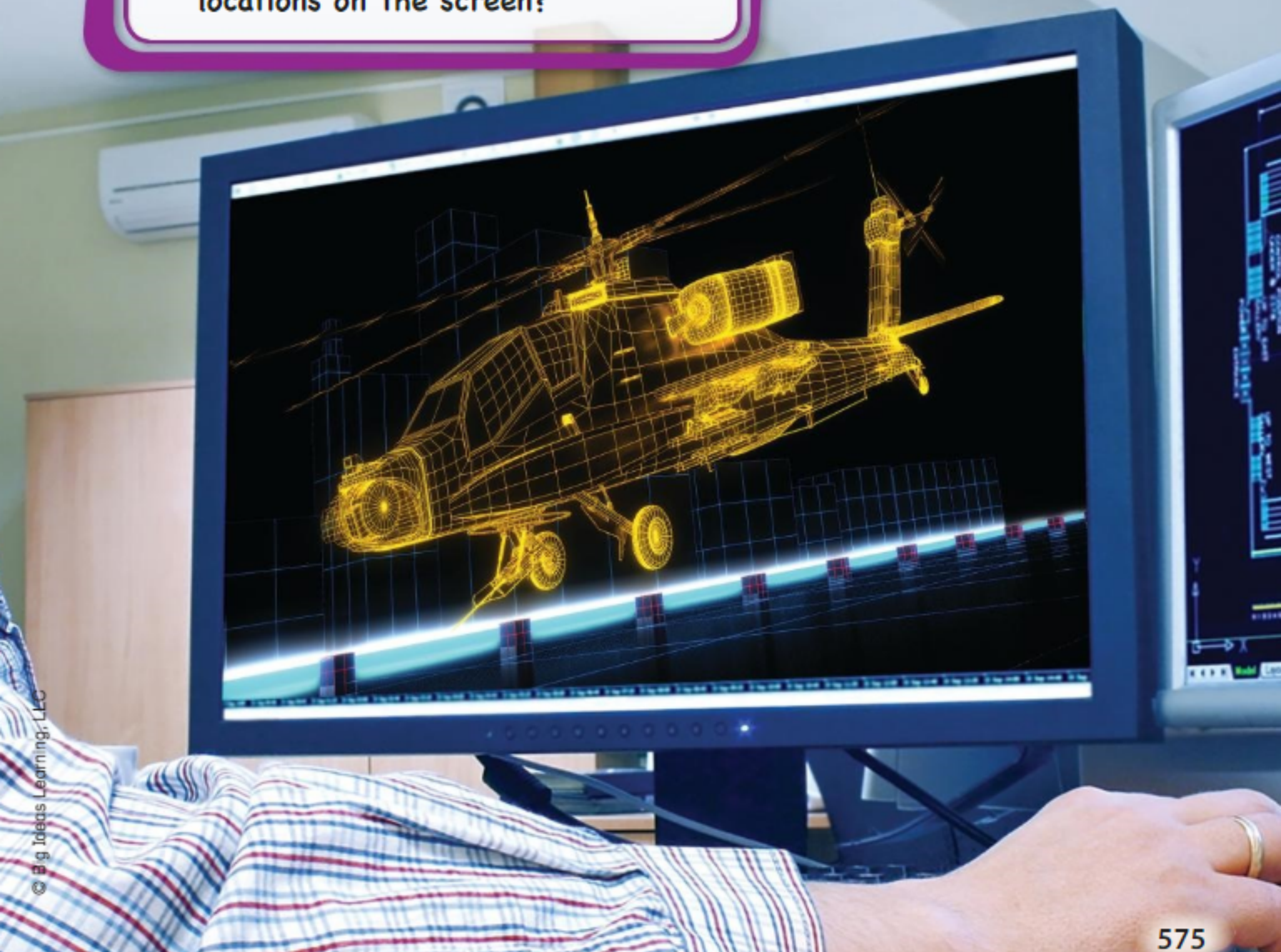
12 Patterns in the Coordinate Plane

Chapter Learning Target:
Understand patterns and the coordinate plane.

Chapter Success Criteria:
- I can identify patterns.
- I can plot points in a coordinate plane.
- I can analyze line graphs.
- I can interpret relationships.

- Have you ever seen an animated video?
- You create a computer animation. How can you use a coordinate plane to move an image to different locations on the screen?



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Name _____

12 Vocabulary

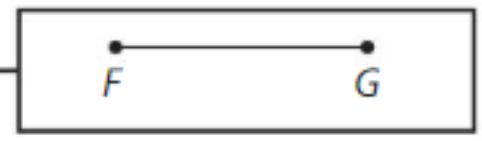
Review Words

endpoints
line
line segment
points

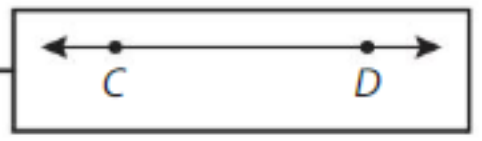
Organize It

Use the review words to complete the graphic organizer.

_____ : A part of a line that includes two _____ and all of the points between them



_____ : A straight path of _____ that goes on without end in both directions



Define It

Use your vocabulary cards to identify the word. Find the word in the word search.

1. The vertical number line in a coordinate plane
2. The point, represented by the ordered pair (0, 0), where the *x*-axis and the *y*-axis intersect in a coordinate plane
3. A pair of numbers that is used to locate a point in a coordinate plane
4. The horizontal number line in a coordinate plane

O	I	Q	D	M	Y	J	E	H	R	P
F	N	U	B	S	A	G	W	C	X	S
O	R	D	E	R	E	D	P	A	I	R
I	P	A	X	L	A	S	Q	K	N	E
D	C	H	I	N	V	I	U	G	I	Y
X	M	E	S	R	T	X	F	X	T	O
A	R	G	L	Z	S	A	N	D	J	R
N	O	M	H	K	U	Y	X	T	A	I
S	T	I	P	N	G	S	L	W	P	G
Y	X	J	U	E	T	B	I	O	N	I
R	G	D	X	A	X	I	S	A	S	N

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Chapter 12 Vocabulary Cards

coordinate plane

data

line graph

ordered pair

origin

x-axis

x-coordinate

y-axis

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Values collected from observations or measurements

Day	1	2	3	4	5
Packages Delivered	128	154	137	168	193

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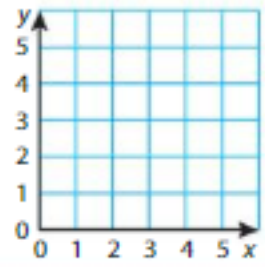
A plane that is formed by the intersection of a horizontal number line and a vertical number line



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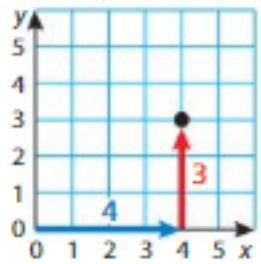
A pair of numbers that is used to locate a point in a coordinate plane

ordered pair: (4, 3)

x-coordinate y-coordinate



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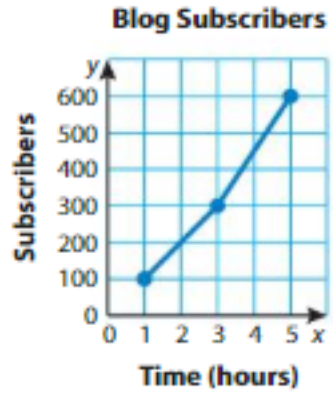
A graph that uses line segments to show how data values change over time



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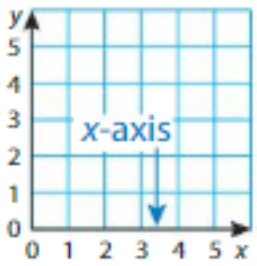
The horizontal number line in a coordinate plane



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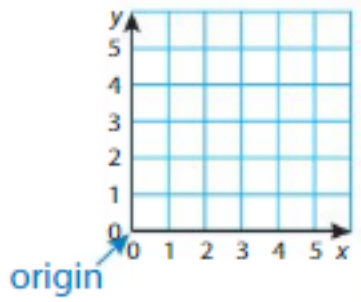
The point, represented by the ordered pair (0, 0), where the *x*-axis and the *y*-axis intersect in a coordinate plane



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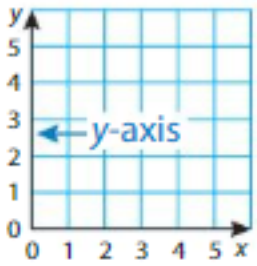
The vertical number line in a coordinate plane



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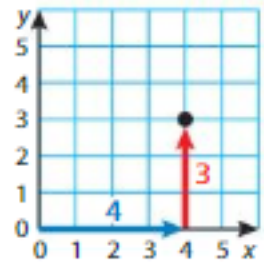
The first number in an ordered pair, which gives the horizontal distance from the origin along the *x*-axis

(4, 3)

x-coordinate



y-coordinate

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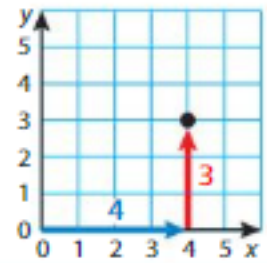
The second number in an ordered pair, which gives the vertical distance from the origin along the *y*-axis

(4, 3)

y-coordinate



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Name _____

Plot Points in a Coordinate Plane

12.1

Learning Target: Identify and plot points in a coordinate plane.

Success Criteria:

- I can use an ordered pair to identify the location of a point in a coordinate plane.
- I can plot and label a point in a coordinate plane.

FLORIDA STANDARDS

MAFS.5.G.1.1
MAFS.5.G.1.2

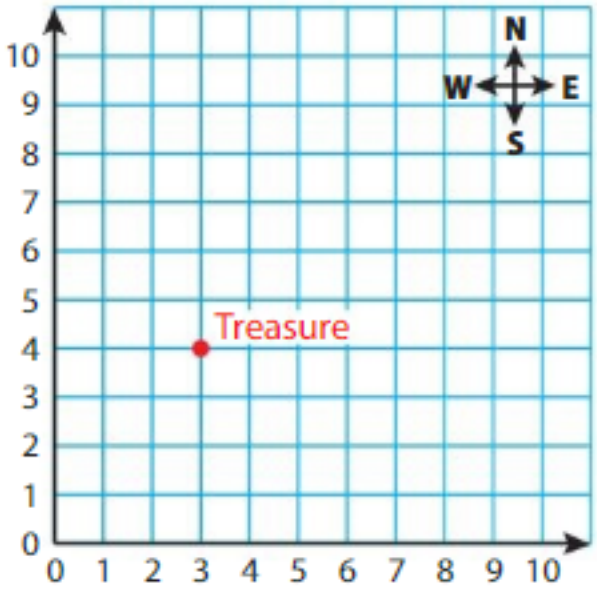
Explore and Grow

Choose a location for your buried treasure on the *My Treasure* grid. Choose a point where two grid lines intersect. An example is shown.

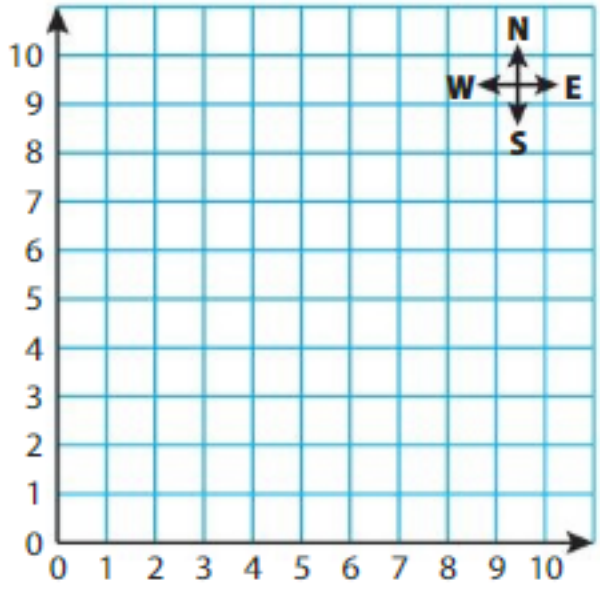


Take turns with a partner guessing the location of each other's buried treasure. Keep track of your guesses on the *My Guesses* grid. After each guess, give a clue to help your partner, such as "my treasure is northwest of your guess." Continue to guess until a treasure is located.

My Treasure



My Guesses



MP **Reasoning** The point where the horizontal number line and the vertical number line intersect is called the *origin*. Why do you think it is called that?

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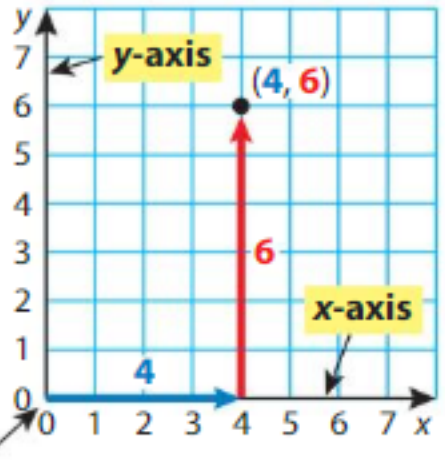
Think and Grow: The Coordinate Plane

Key Idea A **coordinate plane** is formed by the intersection of a horizontal number line and a vertical number line. An **ordered pair** is a pair of numbers that is used to locate a point in a coordinate plane.

ordered pair: (4, 6)

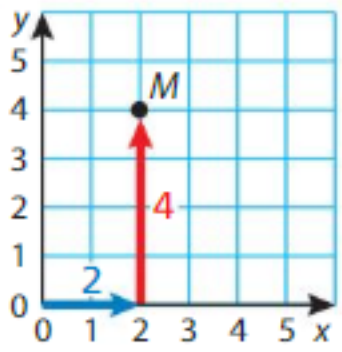
The first number, the ***x*-coordinate**, gives the horizontal distance from the origin along the *x*-axis.

The second number, the ***y*-coordinate**, gives the vertical distance from the origin along the *y*-axis.



The axes intersect at the **origin**, (0, 0).

Example Write the ordered pair that corresponds to point *M*.

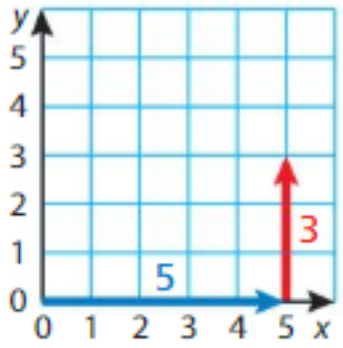


The horizontal distance from the origin to point *M* is _____ units. So, the *x*-coordinate is _____.

The vertical distance from the origin to point *M* is _____ units. So, the *y*-coordinate is _____. The ordered pair is _____.

Example Point *Y* is located at (5, 3). Plot and label the point.

Start at the origin. Move _____ units right and _____ units up. Then plot and label the point.



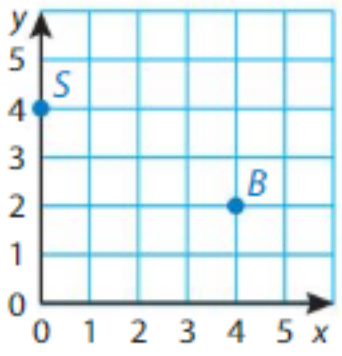


Show and Grow

Write the ordered pair corresponding to the point.

1. Point *B*

2. Point *S*



Plot and label the point in the coordinate plane.

3. *F*(5, 4)

4. *P*(3, 0)

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Name _____

Apply and Grow: Practice

Use the coordinate plane to write the ordered pair corresponding to the point.

5. Point M

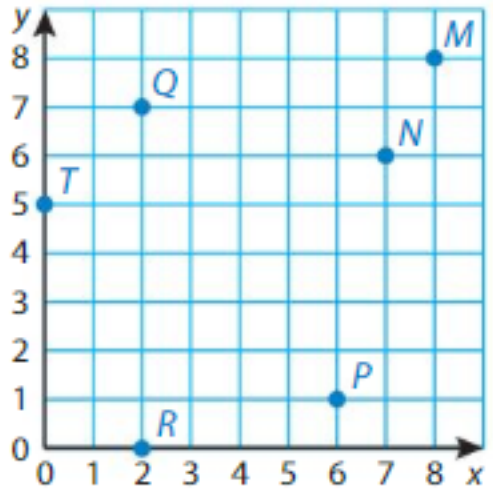
6. Point Q

7. Point N

8. Point R

9. Point P

10. Point T



Plot and label the point in the coordinate plane above.

11. $S(0, 3)$

12. $F(2, 5)$

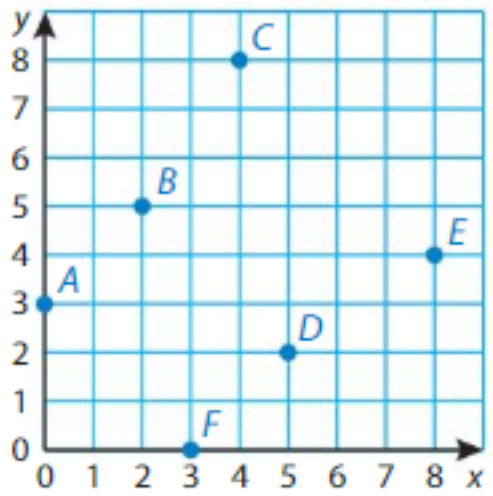
13. $W(0, 0)$

Name the point for the ordered pair.

14. (5, 2)

15. (8, 4)

16. (0, 3)



17. MP **Reasoning** How are the locations of the points $A(0, 4)$ and $B(4, 0)$ different in a coordinate plane?

18. DIG DEEPER! Newton buries a bone in a park at the location shown. How can he use a coordinate plane to describe its location?



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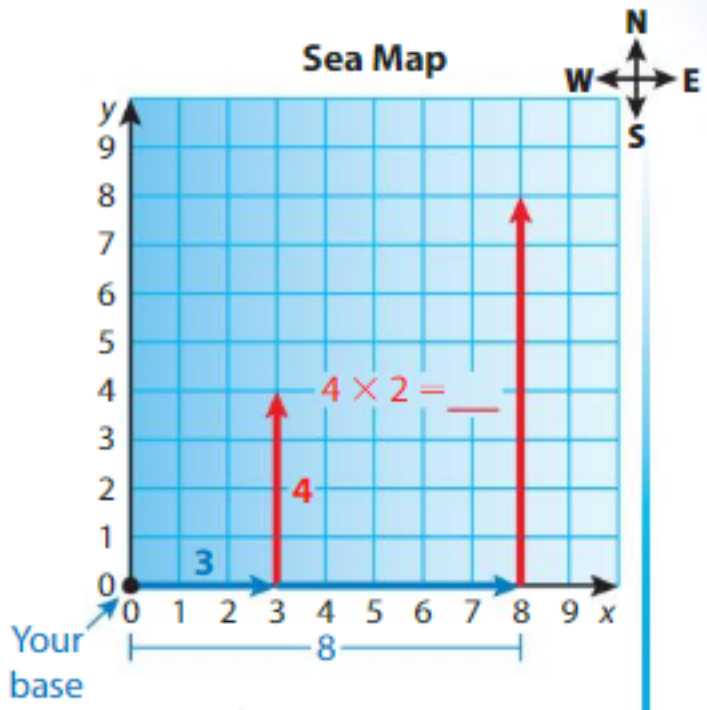
Think and Grow: Modeling Real Life

Example In a video game, you move an aircraft carrier and a tugboat away from your base. Use the directions to plot and label the locations of the aircraft carrier and the tugboat.

- **Aircraft carrier: Located 3 miles east and 4 miles north of your base.**
- Tugboat: Located 8 miles east and twice as many miles north of your base as the aircraft carrier.



Each unit represents 1 mile.

To find the location of the aircraft carrier, start at your base, which is at the origin.

Move _____ units east, or right, and _____ units north, or up.

Plot and label the point as A(_____, _____).

To find the location of the tugboat, start at your base, which is at the origin.

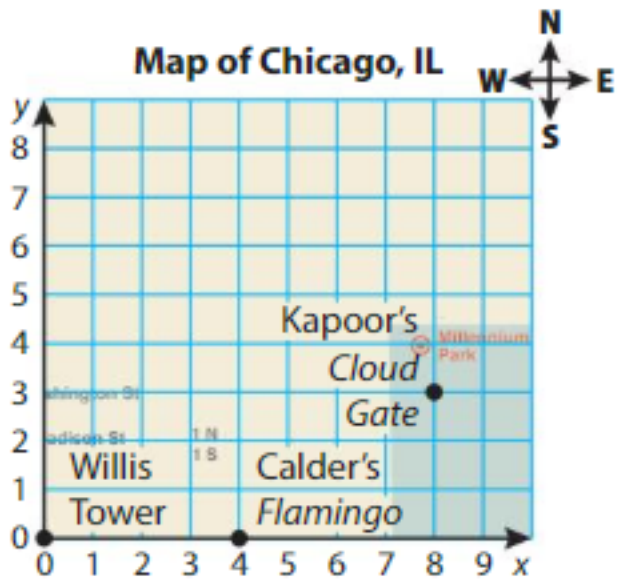
Move _____ units east, or right, and _____ × _____ = _____ units north, or up.

Plot the label the point as T(_____, _____).

Show and Grow

19. A guidebook describes how to get to various statues in Chicago, Illinois, from Willis Tower. Plot and label the location of each statue on the map.

- Dubuffet's *Monument with Standing Beast*: Walk 2 blocks east and 5 blocks north.
- Miró's *Sun, Moon, and One Star*: Walk twice as many blocks east as you do to get to the *Standing Beast*, and 3 blocks north.



Each unit represents 1 city block.

20. **DIG DEEPER!** Which statue is closer to *Sun, Moon, and One Star*, *Cloud Gate* or *Flamingo*? Explain.

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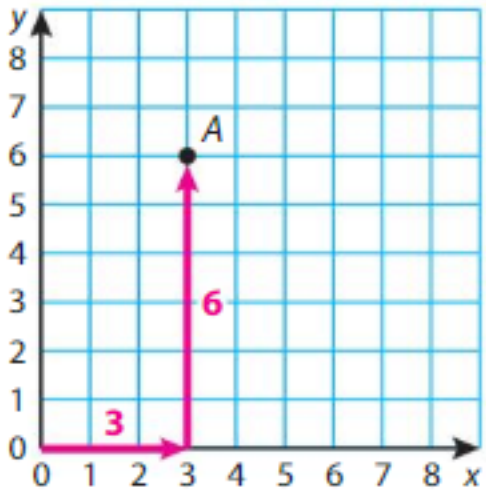
Name _____

Homework & Practice 12.1

Learning Target: Identify and plot points in a coordinate plane.

Example Write the ordered pair that corresponds to point *A*.

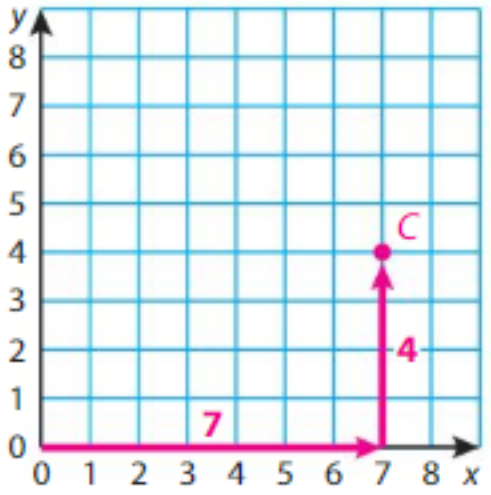


The horizontal distance from the origin to point *A* is 3 units. So, the *x*-coordinate is 3.

The vertical distance from the origin to point *A* is 6 units. So, the *y*-coordinate is 6. The ordered pair is (3, 6).

Example Point *C* is located at (7, 4). Plot and label the point.

Start at the origin. Move 7 units right and 4 units up. Then plot and label the point.



Use the coordinate plane to write the ordered pair corresponding to the point.

1. Point *E*

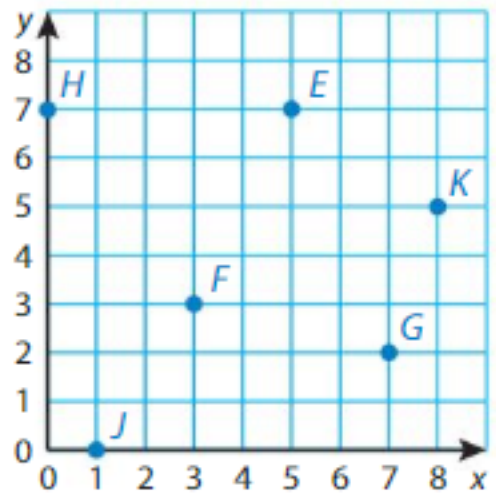
2. Point *H*

3. Point *F*

4. Point *J*

5. Point *G*

6. Point *K*



Plot and label the point in the coordinate plane above.

7. *Z*(8, 0)

8. *B*(5, 5)

9. *M*(1, 2)

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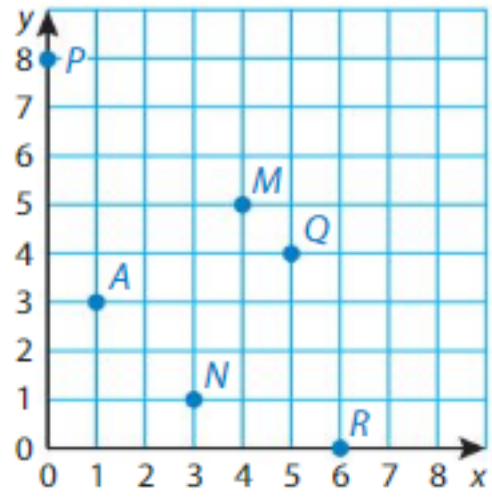
Name the point for the ordered pair.

10. (5, 4)

11. (0, 8)

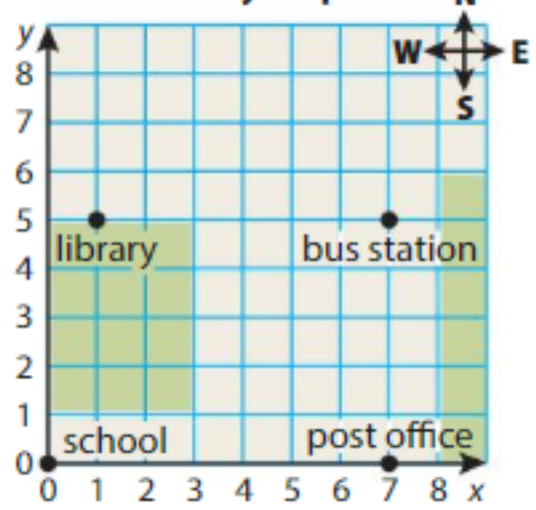
12. (3, 1)



13. **Open-Ended** Use the coordinate plane above. Point *T* is 3 units from point *M*. Name two possible ordered pairs for point *T*.

14. **Writing** Explain why the order of the *x*- and *y*-coordinates is important when identifying or plotting points in a coordinate plane.

15. To get from the school to the arcade, you walk 4 blocks east and 3 blocks north. To get from the school to the skate park, your friend walks 2 blocks east and twice as many blocks north as you. Plot and label the locations of the arcade and the skate park.



Each unit represents 1 city block.

16. **DIG DEEPER!** Which building is closer to the bus station, the library or the post office? Explain.

Review & Refresh

Multiply.

17. $1\frac{1}{4} \times 1\frac{1}{3} =$ _____

18. $1\frac{2}{5} \times 2\frac{1}{2} =$ _____

19. $2\frac{5}{6} \times 3\frac{7}{8} =$ _____

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Name _____

Relate Points in a Coordinate Plane

12.2

Learning Target: Relate points and find distances in a coordinate plane.

Success Criteria:

- I can explain the relationship between two points that have the same *x*-coordinates or *y*-coordinates.
- I can count grid lines to find the distance between two points.
- I can use subtraction to find the distance between two points.

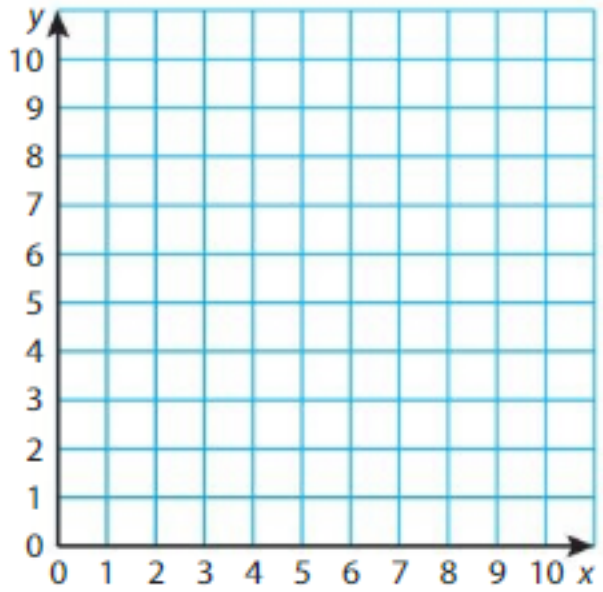
FLORIDA STANDARDS

MAFS.5.G.1.1
MAFS.5.G.1.2

Explore and Grow

Plot and label the points in the coordinate plane.

$A(4, 2)$	$B(1, 1)$
$C(10, 2)$	$D(9, 6)$
$E(0, 6)$	$F(5 , 7)$
$G(1, 9)$	$H(5, 10)$



Draw a line segment to connect each pair of points.

A and C	B and G
D and E	F and H

Plot and label more points that lie on the line segments you drew. What do you notice about the coordinates?

MP **Construct Arguments** How can you find the distance between each pair of points? Explain your reasoning.

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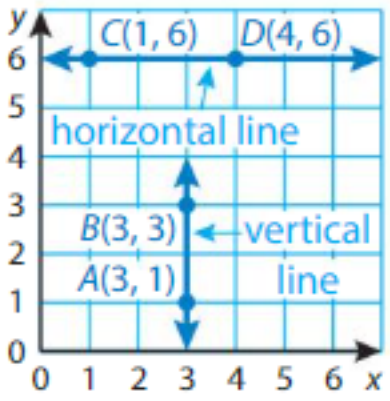
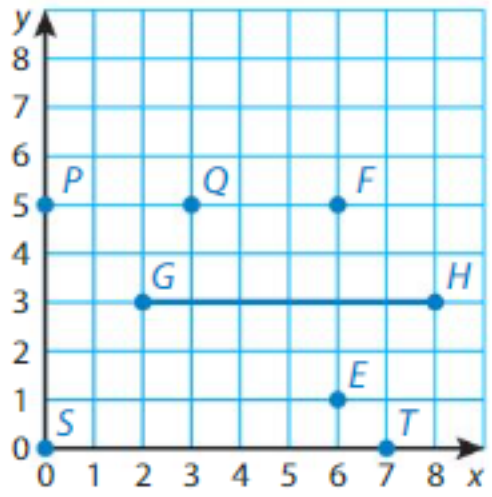
Think and Grow: Relate Points in a Coordinate Plane

Key Idea Points on a horizontal line have the same *y*-coordinates. Points on a vertical line have the same *x*-coordinates.

You can count units or use subtraction to find the distance between two points when they lie on the same horizontal line or vertical line.



Example Find the distance between points *G* and *H*.



One Way: Count units.

Step 1: Identify the locations of the points: Point *G* is located at (2, 3). Point *H* is located at (8, 3).

Step 2: Draw a line segment to connect the points.

Step 3: Count horizontal units: There are _____ units between points *G* and *H*.

So, the distance between points *G* and *H* is _____.

Another Way: Use subtraction.

Points *G* and *H* have the same *y*-coordinates. They lie on a horizontal line. Subtract the *x*-coordinates to find the distance.

$8 - 2 =$ _____

So, the distance between points *G* and *H* is _____.

Show and Grow

Find the distance between the points in the coordinate plane above.

1. *E* and *F*

2. *P* and *Q*

3. *S* and *T*

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Name _____

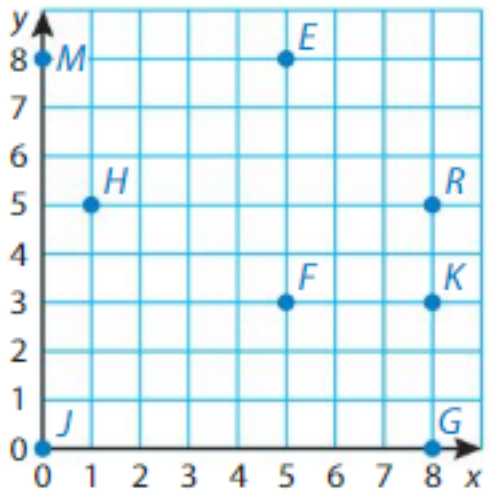
Apply and Grow: Practice

Find the distance between the points in the coordinate plane.

4. E and F

5. J and G

6. F and K



7. Which is longer, $\overline{JM}$ or $\overline{HR}$?

Find the distance between the points.

8. (1, 7) and (7, 7)

9. (0, 1) and (3, 1)

10. (0, 0) and (6, 0)

A line passes through the given points. Name two other points that lie on the line.

11. (0, 6) and (5, 6)

12. (4, 2) and (4, 8)

13. (3, 3) and (3, 6)

14. **YOU BE THE TEACHER** Newton plots the points $A(2, 7)$ and $B(6, 7)$ and connects them with a line segment. Descartes says that (10, 7) also lies on the line segment. Is he correct? Explain.

15. **DIG DEEPER!** Which pair of points does *not* lie on a line that is parallel to the x-axis? Explain.

(3, 1) and (7, 1)

(8, 4) and (2, 4)

(1, 2) and (1, 6)

(0, 5) and (6, 5)

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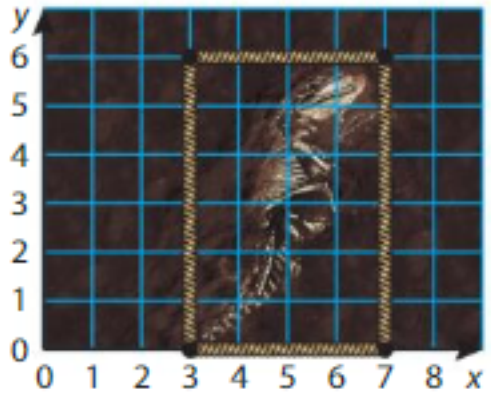
Think and Grow: Modeling Real Life

Example An archaeologist uses rope to section off a rectangular dig site. How many meters of rope does the archaeologist use?



Each unit represents 1 meter.

To find how many meters of rope the archaeologist uses, find the perimeter of the rectangular dig site.

Find the length of the site.
The length is the distance between the points (_____, _____) and (_____, _____).

ℓ = _____ − _____ = _____ meters

Find the width of the site.
The width is the distance between the points (_____, _____) and (_____, _____).

w = _____ − _____ = _____ meters

Use a formula to find the perimeter of the site.

$P = (2 \times \ell) + (2 \times w) = (2 \times$ _____ $) + (2 \times$ _____ $)$

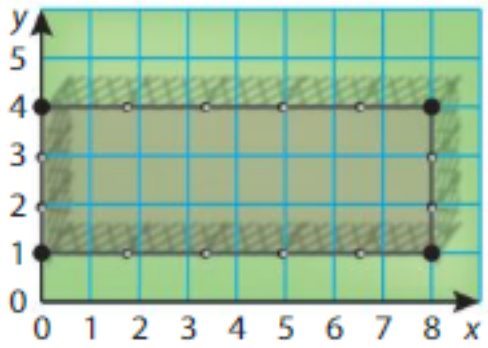
= _____ + _____

= _____

So, the archaeologist uses _____ meters of rope.

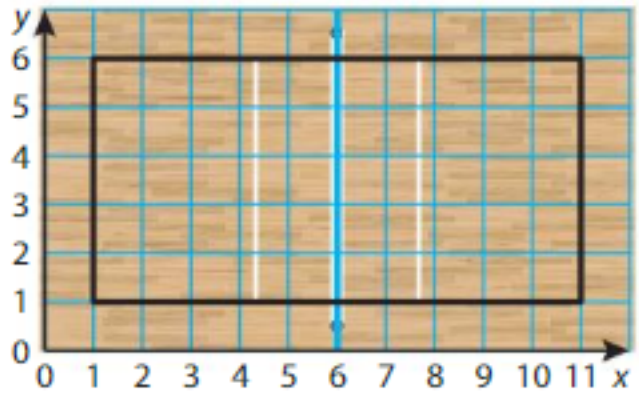
Show and Grow

16. The owner of an animal shelter uses fencing to create a rectangular dog pen. How many yards of fencing does the owner use?



Each unit represents 1 yard.

17. **DIG DEEPER!** You run 5 laps around the edges of the volleyball court. How far do you run in feet? in yards?



Each unit represents 6 feet.

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Name _____

Homework & Practice 12.2

Learning Target: Relate points and find distances in a coordinate plane.

Example Find the distance between points C and D.

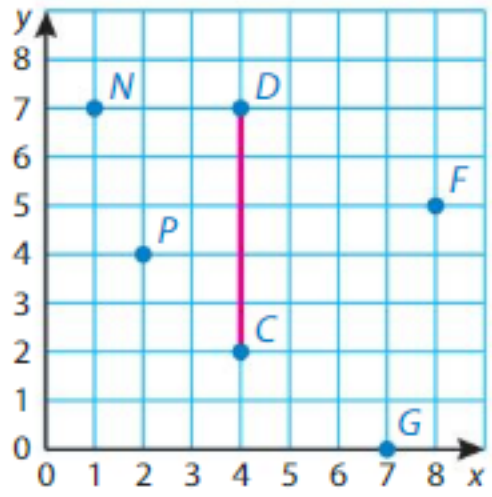
One Way: Count units.

Step 1: Identify the locations of the points: Point C is located at (4, 2). Point D is located at (4, 7).

Step 2: Draw a line segment to connect the points.

Step 3: Count vertical units: There are 5 units between points C and D.

So, the distance between points C and D is 5 units.



Another Way: Use subtraction.

Points C and D have the same x-coordinates. They lie on a vertical line. Subtract the y-coordinates to find the distance.

$7 - 2 = 5$

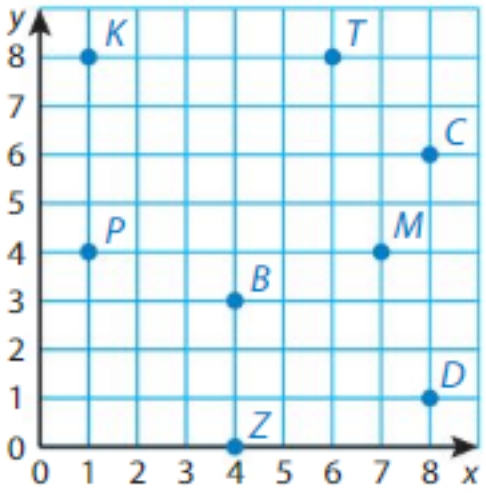
So, the distance between points C and D is 5 units.

Find the distance between the points in the coordinate plane.

1. P and M

2. B and Z

3. K and T



4. Which is longer, $\overline{CD}$ or $\overline{KP}$?

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Find the distance between the points.

5. (1, 5) and (6, 5)

6. (3, 4) and (3, 6)

7. (0, 2) and (0, 9)

A line passes through the given points. Name two other points that lie on the line.

8. (6, 0) and (6, 7)

9. (5, 3) and (1, 3)

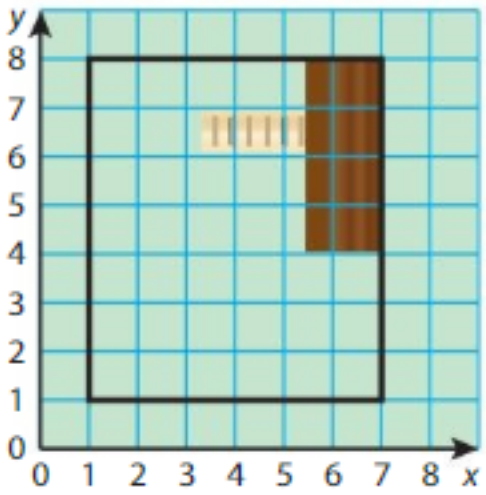
10. (2, 2) and (2, 9)

11. MP **Structure** Name four different points that are 3 units away from (5, 4).

12. MP **Number Sense** Which point is farther from (3, 4)? Explain.

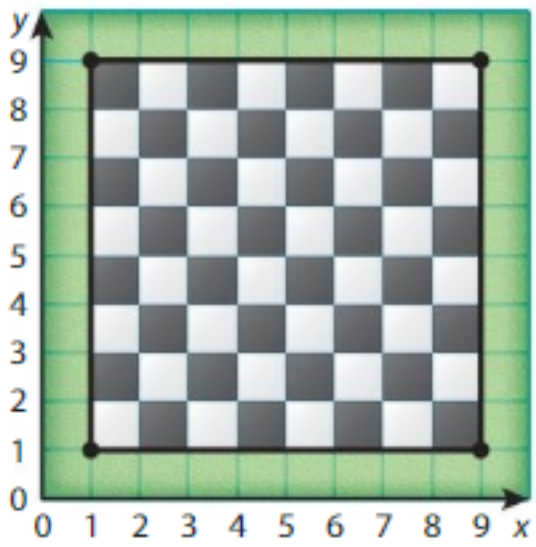
$J(3, 9)$ $K(9, 4)$

13. **Modeling Real Life** A farmer builds a coop for his chickens. He uses poultry netting to enclose the coop. How many feet of netting does he use?



Each unit represents 1 foot.

14. **Modeling Real Life** A giant chessboard is painted on the ground in a park. How many square yards of space does the chessboard occupy?



Each unit represents 1 yard.

Review & Refresh

Find the quotient. Then check your answer.

15. $23.6 \div 4 =$ _____

16. $36.9 \div 3 =$ _____

17. $114.87 \div 7 =$ _____

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Name _____

Draw Polygons in a Coordinate Plane

12.3

Learning Target: Draw and identify polygons in a coordinate plane.

Success Criteria:

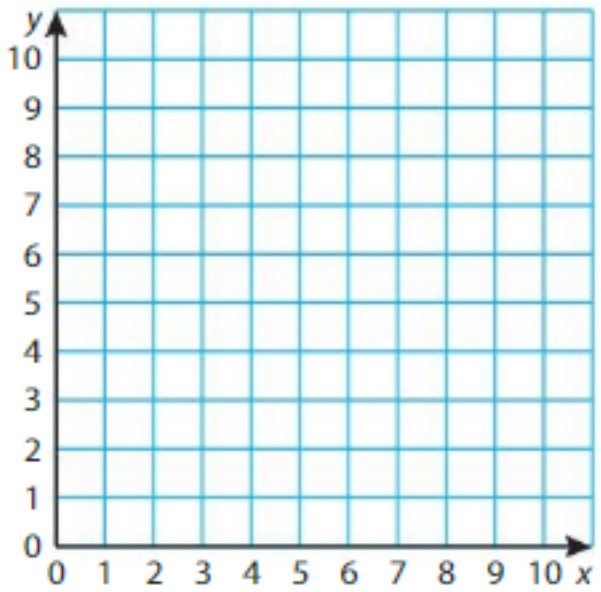
- I can draw polygons in a coordinate plane.
- I can identify polygons in a coordinate plane.
- I can draw a symmetric shape in a coordinate plane given one half of the shape and a line of symmetry.

FLORIDA STANDARDS

MAFS.5.G.1.1
MAFS.5.G.1.2

Explore and Grow

Plot and label three points in which two of the ordered pairs have the same *x*-coordinates and two of the ordered pairs have the same *y*-coordinates.



The points represent the vertices of a polygon. Describe the polygon.

MP **Structure** Explain how you can plot another point above to form a rectangle.

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Think and Grow: Draw Polygons in a Coordinate Plane

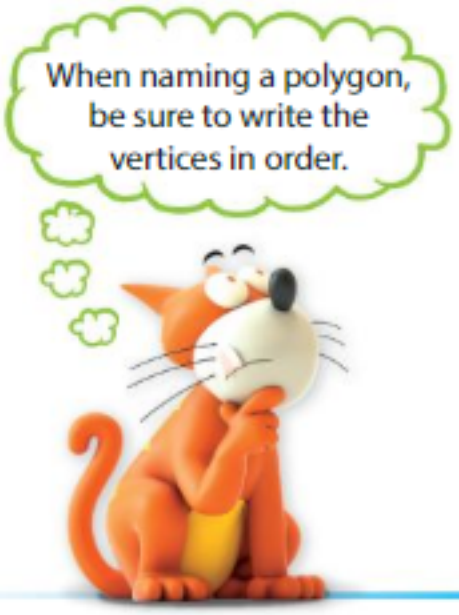
Key Idea You can use ordered pairs to represent vertices of polygons. To draw a polygon in a coordinate plane, plot and connect the vertices.

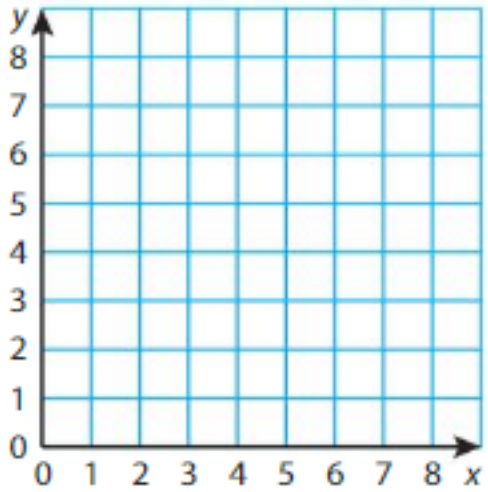
Example The vertices of a polygon are $A(2, 2)$, $B(3, 5)$, $C(6, 6)$, and $D(6, 2)$. Draw the polygon in a coordinate plane. Then identify it.

Step 1: Plot and label the vertices.

Step 2: Draw line segments to connect the points.

Be sure to connect the points in order to draw the polygon.



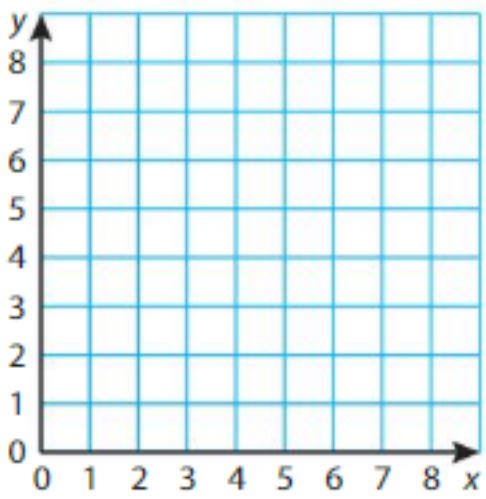


Polygon $ABCD$ is a _____.

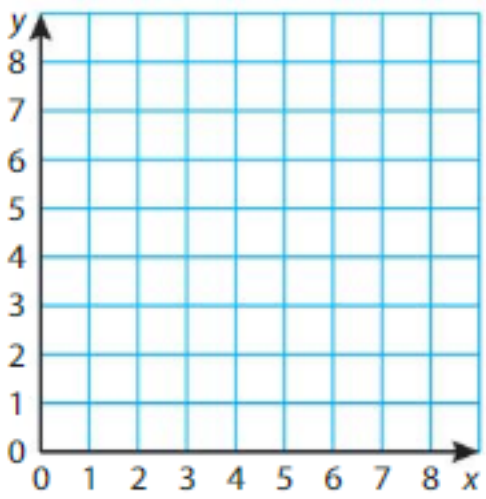
Show and Grow

Draw the polygon with the given vertices in a coordinate plane. Then identify it.

1. $J(0, 8)$, $K(4, 7)$, $L(5, 0)$



2. $P(1, 4)$, $Q(2, 7)$, $R(6, 7)$, $S(7, 4)$, $T(4, 1)$



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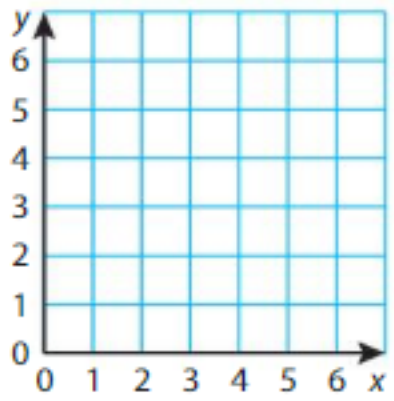
Name _____

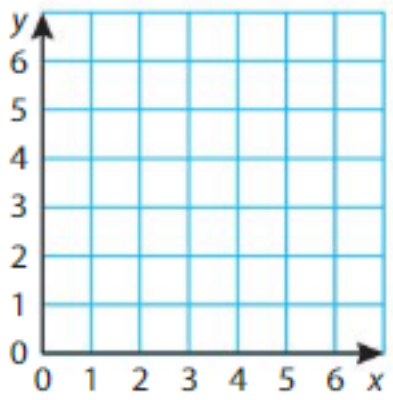
Apply and Grow: Practice

Draw the polygon with the given vertices in a coordinate plane. Then identify it.

3. $C(1, 6)$, $D(4, 6)$, $E(4, 1)$, $F(1, 1)$



4. $J(2, 2)$, $K(2, 4)$, $L(4, 6)$, $M(6, 4)$, $N(6, 2)$, $P(4, 1)$



Identify the polygon with the given vertices.

5. $A(2, 6)$, $B(6, 2)$, $C(3, 2)$

6. $G(0, 3)$, $H(6, 3)$, $J(4, 1)$, $K(2, 1)$

7. $P(1, 1)$, $Q(1, 6)$, $R(6, 6)$, $S(6, 1)$

8. $X(0, 0)$, $Y(0, 7)$, $Z(2, 0)$

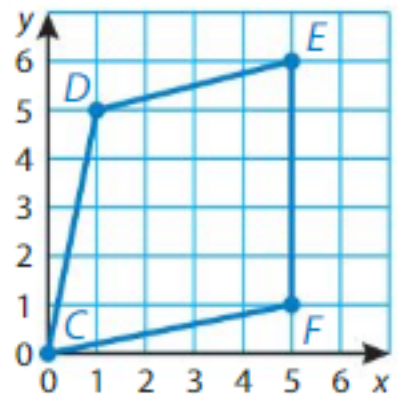
Plot (6, 3), (6, 8), and (9, 3) in a coordinate plane. Plot another point to form the given quadrilateral. Name the point.

9. rectangle

10. trapezoid

11. **Open-Ended** Write four ordered pairs that represent the vertices of a square.

12. **YOU BE THE TEACHER** Your friend draws the polygon shown. She names the polygon $EFDC$. Is your friend correct? Explain.



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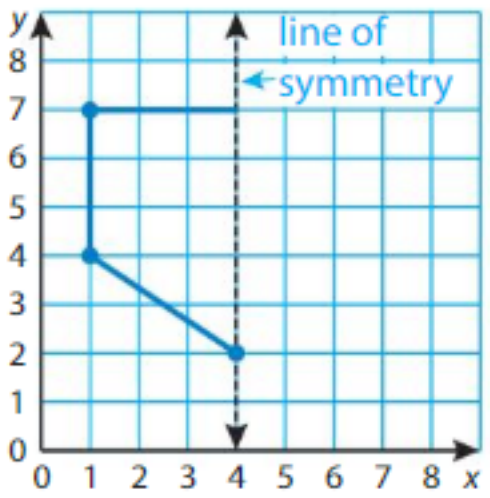
Think and Grow: Modeling Real Life

Example You and a friend use computer software to create a symmetric company logo using a coordinate plane. Your friend completes one half of the logo as shown. Draw the other half. Then list the vertices of the logo.



Step 1: Plot the vertices for the other half of the logo on the opposite side of the line of symmetry.

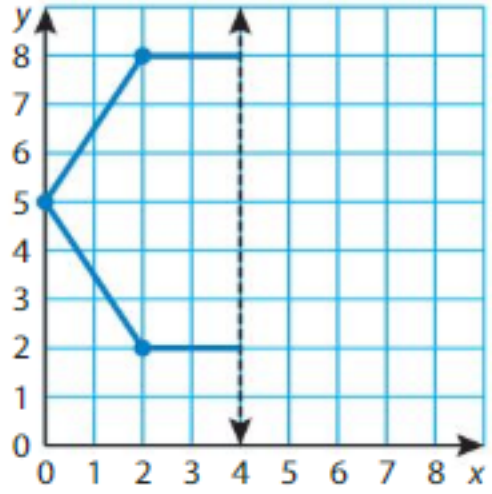
Step 2: Draw line segments to connect the points.

The vertices of the logo are _____, _____, _____, _____, and _____.

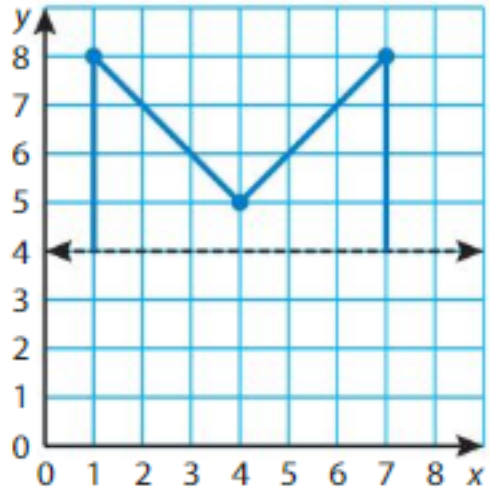
Show and Grow

Draw the other half of the symmetric logo. Then list its vertices.

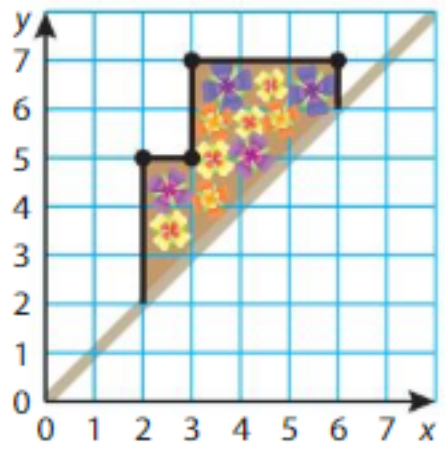
13.



14.



15. **DIG DEEPER!** One half of the design for a symmetric flower garden is shown in the coordinate plane. The line of symmetry is represented by the walkway. Draw the other half of the design for the flower garden. Then list its vertices.



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Name _____

Homework & Practice 12.3

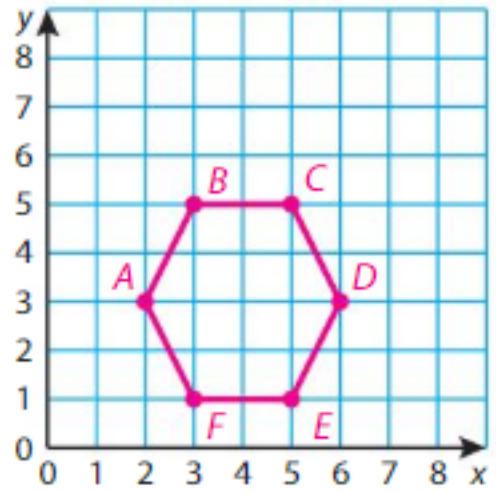
Learning Target: Draw and identify polygons in a coordinate plane.

Example The vertices of a polygon are $A(2, 3)$, $B(3, 5)$, $C(5, 5)$, $D(6, 3)$, $E(5, 1)$ and $F(3, 1)$. Draw the polygon in a coordinate plane. Then identify it.

Step 1: Plot and label the vertices.

Step 2: Draw line segments to connect the points.

Be sure to connect the points in order to draw the polygon.



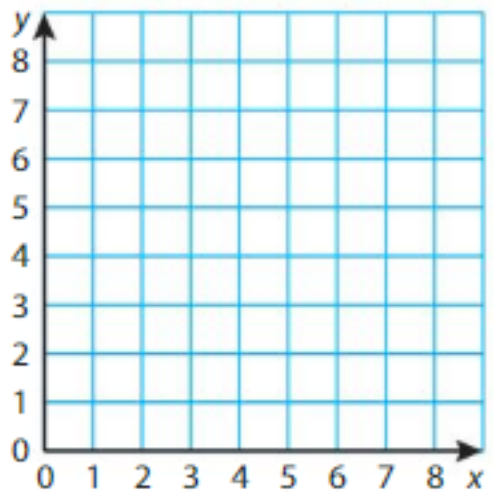
When naming a polygon, be sure to write the vertices in order.



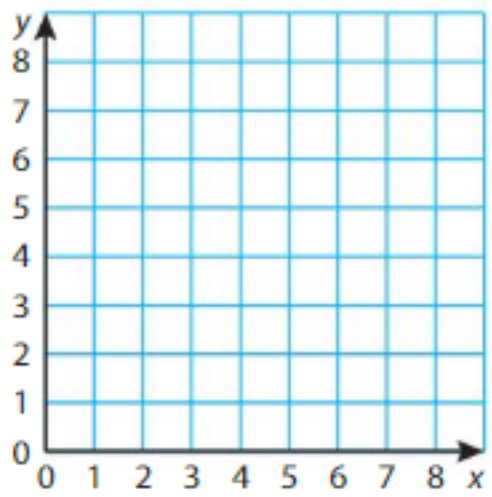
Polygon *ABCDEF* is a hexagon.

Draw the polygon with the given vertices in a coordinate plane. Then identify it.

1. $A(2, 3)$, $B(2, 6)$, $C(5, 6)$, $D(5, 3)$



2. $J(3, 2)$, $K(3, 5)$, $L(6, 5)$



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Identify the polygon with the given vertices.

3. $M(2, 6), N(4, 4), P(4, 0), Q(2, 2)$

4. $A(1, 2), B(1, 6), C(4, 6), D(6, 4), E(4, 2)$

5. $P(4, 1), Q(0, 1), R(1, 4), S(5, 5)$

6. $E(1, 2), F(1, 3), G(6, 3), H(6, 2)$

Plot (1, 2), (4, 2), and (3, 4) in a coordinate plane. Plot another point to form the given quadrilateral. Name the point.

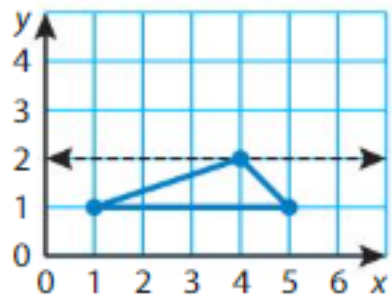
7. trapezoid

8. parallelogram

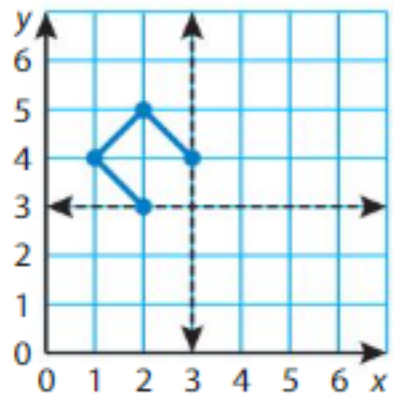
9. **Open-Ended** Write the coordinates of the vertices of a rectangle that has a perimeter of 12 units and an area of 5 square units.

10. MP **Reasoning** Five ordered pairs represent the vertices of a polygon. Will the polygon always be a pentagon?

11. **Modeling Real Life** Draw the other half of the symmetric logo. Then list its vertices.



12. DIG DEEPER! You complete one fourth of an image with graphic design software. The computer generates the rest of the image with the two lines of symmetry. Draw the rest of the image.



Review & Refresh

Estimate the sum or difference.

13. $\frac{13}{12} - \frac{5}{6}$

14. $\frac{9}{16} + \frac{4}{10}$

15. $\frac{19}{20} - \frac{7}{8}$

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Name _____

Graph Data 12.4

Learning Target: Graph and interpret data in a coordinate plane.

Success Criteria:

- I can use ordered pairs to represent data.
- I can graph data in a coordinate plane.
- I can interpret data shown in a coordinate plane.

FLORIDA STANDARDS

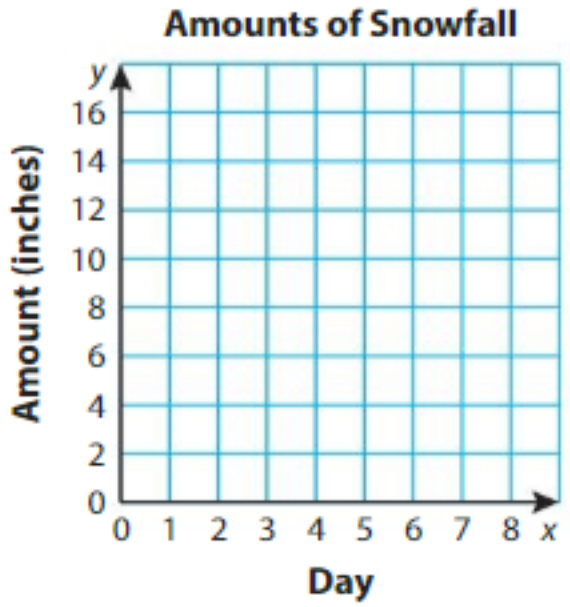
MAFS.5.G.1.1
MAFS.5.G.1.2

Explore and Grow

The table shows the amount of snow that falls each day for 7 days. Show how you can use ordered pairs in the coordinate plane to represent this information. Explain.



Day	1	2	3	4	5	6	7
Amount (inches)	2	4	6	6	8	10	14



What conclusions can you make from your data display?

MP **Reasoning** On Day 8, 1 inch of snow falls. How can you represent this information in the coordinate plane?

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Think and Grow: Graph Data

Key Idea **Data** are values collected from observations or measurements. You can use a coordinate plane to graph and interpret two categories of related data.

Example The table shows how many gold bars you collect at each level of a video game. Graph the data in a coordinate plane. In how many levels do you collect more than 30 gold bars?

Level	1	2	3	4	5	6
Gold Bars Collected	25	40	45	0	40	15

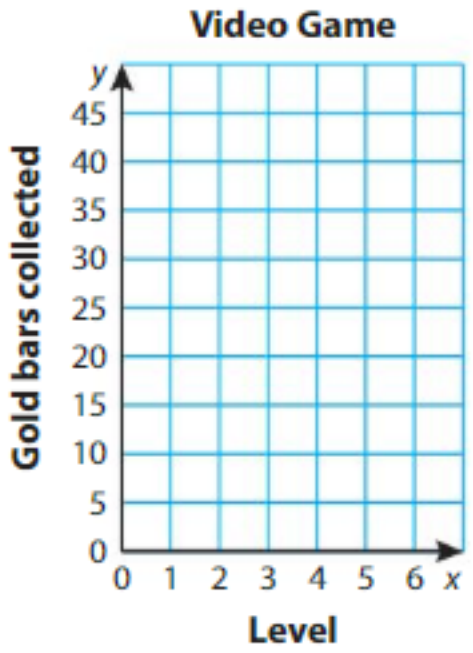
Step 1: Write the ordered pairs from the table.

(1, 25), (2, 40), (3, 45), (4, 0), (5, 40), (6, 15)

Step 2: For each axis, choose appropriate numbers to represent the data in the table.

Step 3: Write a title for the graph and label each axis.

Step 4: Plate a point for each ordered pair.

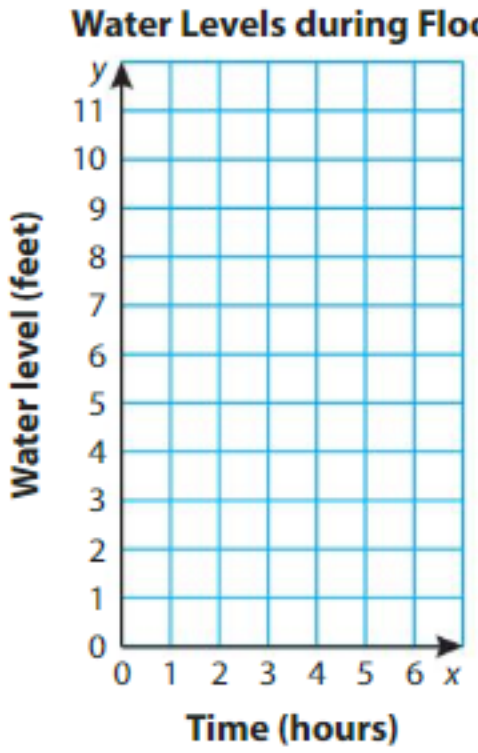


Three points are above the grid line that represents 30 bars. So, you collect more than 30 gold bars in _____ levels.

Show and Grow

1. The table shows the water levels of a portion of a river during a flood. Graph the data.

Time (hours)	Water Level (feet)
1	5
2	8
3	10
4	11
5	7
6	5



What does the point (5, 7) represent?

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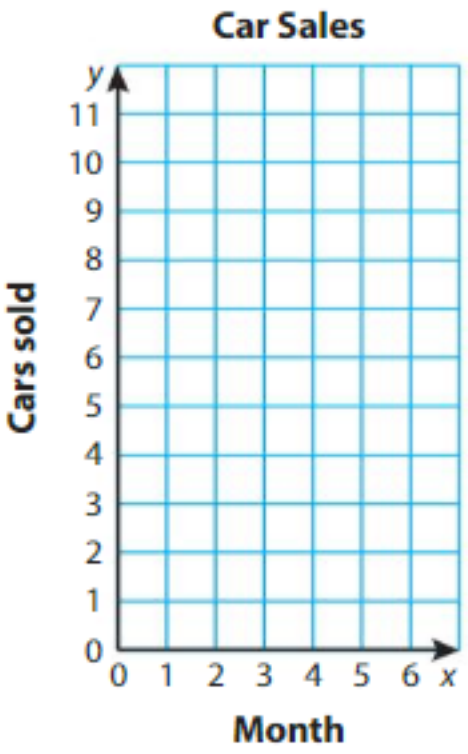
Name _____

Apply and Grow: Practice

2. The table shows how many cars a salesman sells in each of 6 months. Graph the data.

Month	1	2	3	4	5	6
Cars Sold	7	10	6	11	10	10

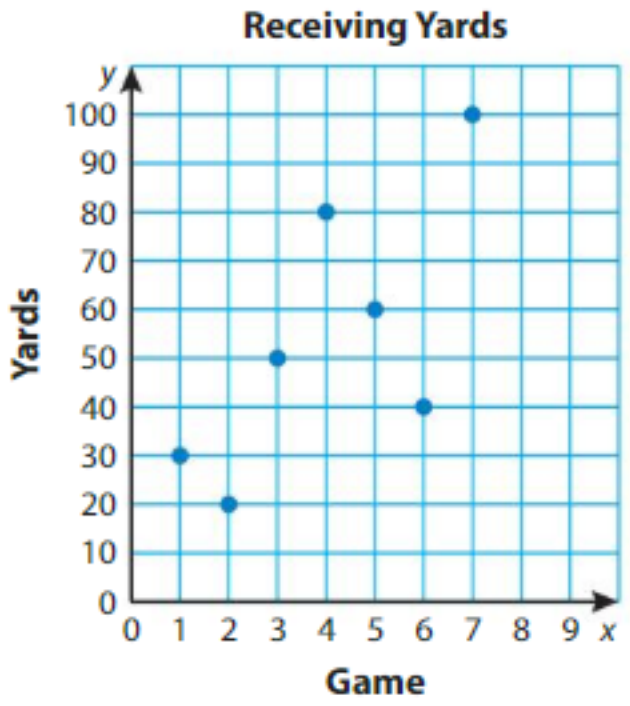


What does the point (1, 7) represent?

What is the difference of the greatest number of cars sold and the least number of cars sold? Explain.

Use the graph.

3. The graph shows how many receiving yards a football player has in each of seven games. How many receiving yards does he have in Game 3?



How many times as many receiving yards does he have in Game 4 as in Game 2?

In how many games does he have more than 40 receiving yards? fewer than 40 receiving yards?

4. DIG DEEPER! The player has 75 receiving yards in Game 8. The player has $\frac{1}{5}$ of this number of receiving yards in Game 9. Graph the data in the coordinate plane above.

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Think and Grow: Modeling Real Life



Example The table shows the ages of eight students and the time they spend on the Internet for 1 week. Graph the data. Of the students who spend more than 15 hours on the Internet, how many are older than 10?

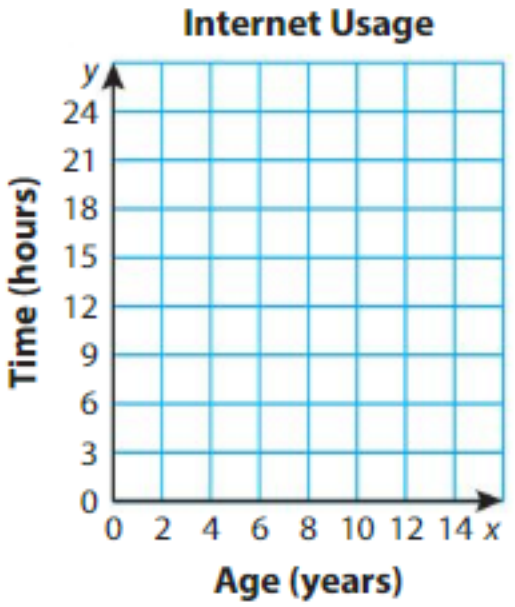
Student	A	B	C	D	E	F	G	H
Age (years)	9	10	11	10	10	8	11	12
Time (hours)	15	21	18	16	12	18	9	22

Step 1: Write the ordered pairs from the table.
(9, 15), (10, 21), (11, 18), (10, 16),
(10, 12), (8, 18), (11, 9), (12, 22)

Step 2: For each axis, choose appropriate numbers to represent the data in the table.

Step 3: Write a title for the graph and label each axis.

Step 4: Plot a point for each ordered pair.



Five points are above the grid line that represents

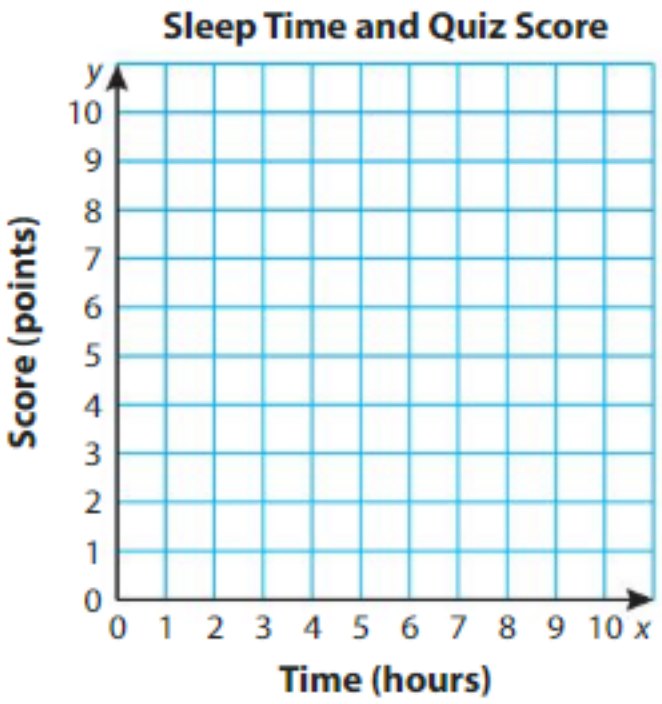
15 hours. Of those, _____ points represent students older than 10.

So, _____ students older than 10 spend more than 15 hours on the Internet.

Show and Grow

5. The table shows how much five students sleep the night before a quiz and their quiz scores. Graph the data. Of the students who sleep more than 7 hours, how many score higher than 8 points?

Student	A	B	C	D	E
Time (hours)	7	8	9	8	7
Score (points)	8	8	9	10	9



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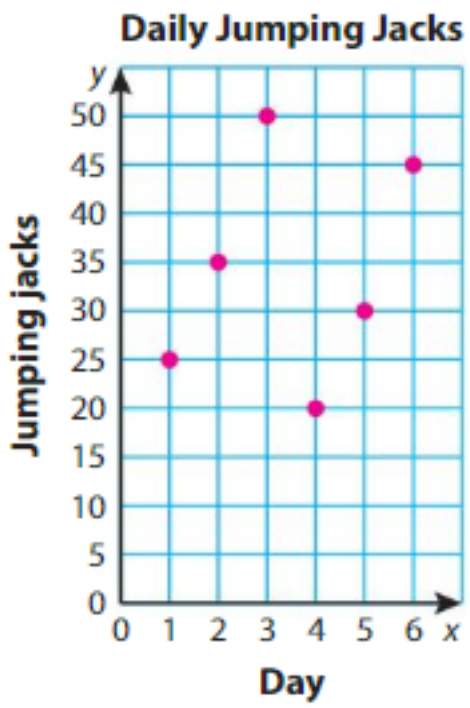
Name _____

Homework & Practice 12.4

Learning Target: Graph and interpret data in a coordinate plane.

Example The table shows how many jumping jacks you do on each of 6 days. Graph the data.

Day	1	2	3	4	5	6
Jumping Jacks	25	35	50	20	30	45

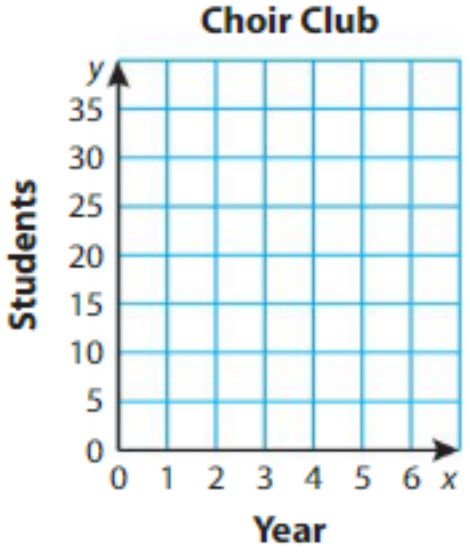


What does the point (3, 50) represent?

On Day 3, you do 50 jumping jacks.

1. The table shows how many students are in a choir club in each of 6 years. Graph the data.

Year	1	2	3	4	5	6
Students	15	20	25	30	30	35



What does the point (2, 20) represent?

What is the difference of the greatest number of students and least number of students? Explain.

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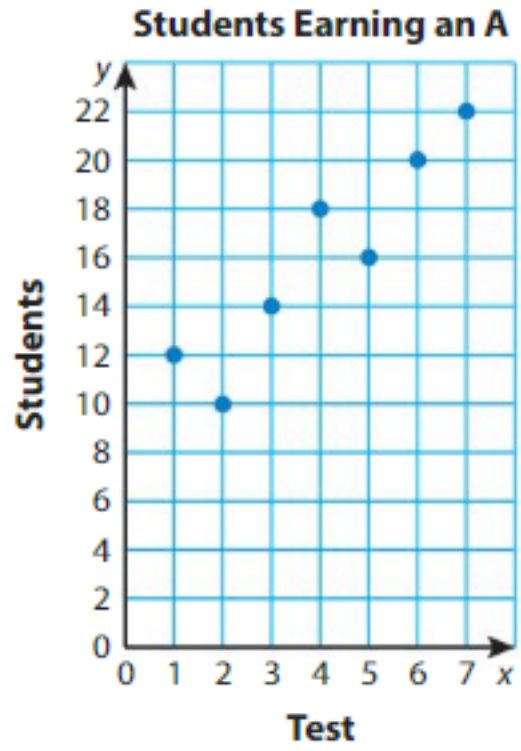
Use the graph.



2. The graph shows how many students earn an A on each of seven tests. How many students earn an A on Test 4?

How many times as many students earn an A on Test 6 as on Test 2?

On how many tests do fewer than 20 students earn an A? more than 20 students?

---

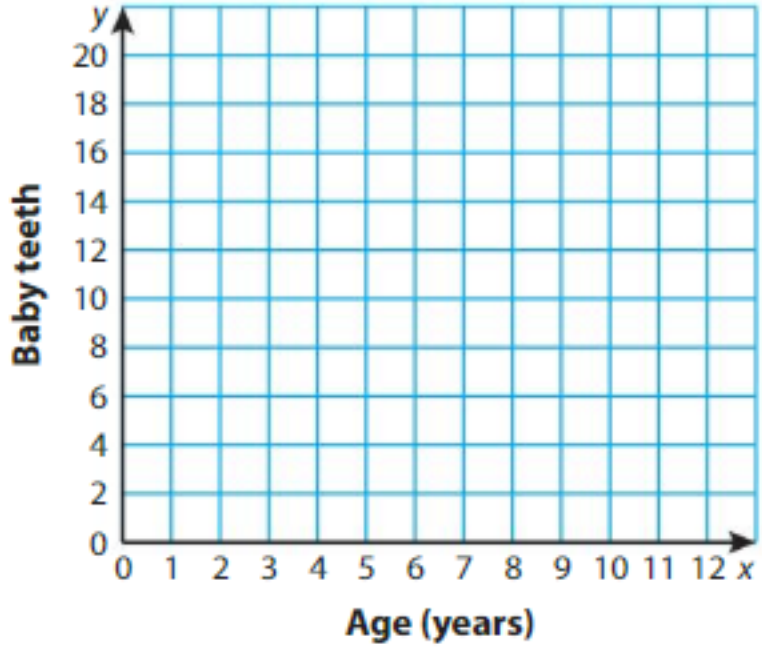
3. **DIG DEEPER!** Twenty-five students take Test 1. How many students do *not* earn an A on the test?

---

4. **Modeling Real Life** The table shows the ages of five students and how many baby teeth each of them has lost. Graph the data. Of the students who are older than 10 years, how many lost more than 18 baby teeth?

Student	A	B	C	D	E
Age (years)	10	12	11	10	11
Baby Teeth Lost	18	20	18	14	20

Student Ages and Teeth Lost



Review & Refresh

Find the quotient. Then check your answer.

5. $5 \div 0.8 =$ _____

6. $91.2 \div 15 =$ _____

7. $14.4 \div 3.2 =$ _____

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Name _____

Make and Interpret Line Graphs

12.5

Learning Target: Make and interpret line graphs.

Success Criteria:

- I can make a line graph.
- I can interpret a line graph.

FLORIDA STANDARDS

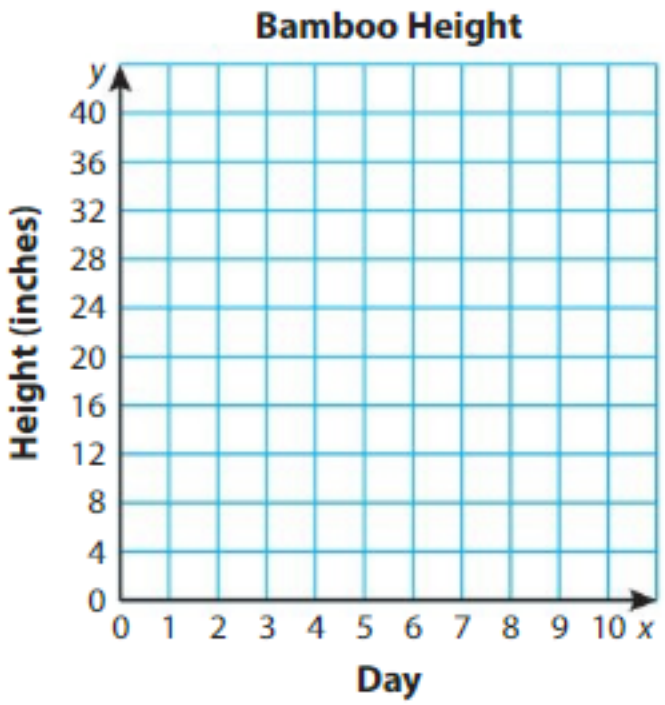
MAFS.5.G.1.1
MAFS.5.G.1.2

Explore and Grow

The table shows the heights of a bamboo plant over several days. Show how you can use a coordinate plane to represent this information. Explain.



Day	1	3	5	7	9
Height (inches)	4	8	16	22	36



How can you use your graph to estimate the height of the plant on Day 4? Explain.

MP **Reasoning** What could the height of the bamboo plant be on Day 10? Explain your reasoning.

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Think and Grow: Make and Interpret Line Graphs

Key Idea A **line graph** is a graph that uses line segments to show how data values change over time.

Example The table shows the weights of a dog over 6 months. Make a line graph of the data. Between which two months of age does the dog gain the most weight?

Age (months)	1	2	3	4	5	6
Weight (pounds)	10	20	30	50	55	58

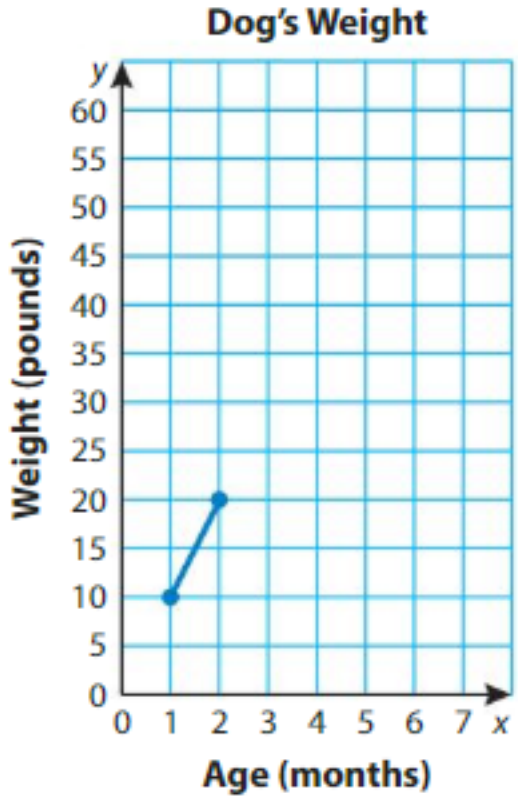
Step 1: Write the ordered pairs from the table.

(1, 10), (2, 20), (3, 30), (4, 50), (5, 55), (6, 58)

Step 2: For each axis, choose appropriate numbers to represent the data in the table.

Step 3: Write a title for the graph and label each axis.

Step 4: Plot a point for each ordered pair. Then connect the points with line segments.



The greatest difference in weights occurs between the points (_____, _____) and (_____, _____).

So, the dog gains the most weight between _____ and _____ months of age.

Show and Grow

Use the graph above.

1. Between which two months of age does the dog gain the least amount of weight? Explain.

2. How much do you think the dog weighs when it is 7 months of age? Explain your reasoning.

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Name _____

Apply and Grow: Practice

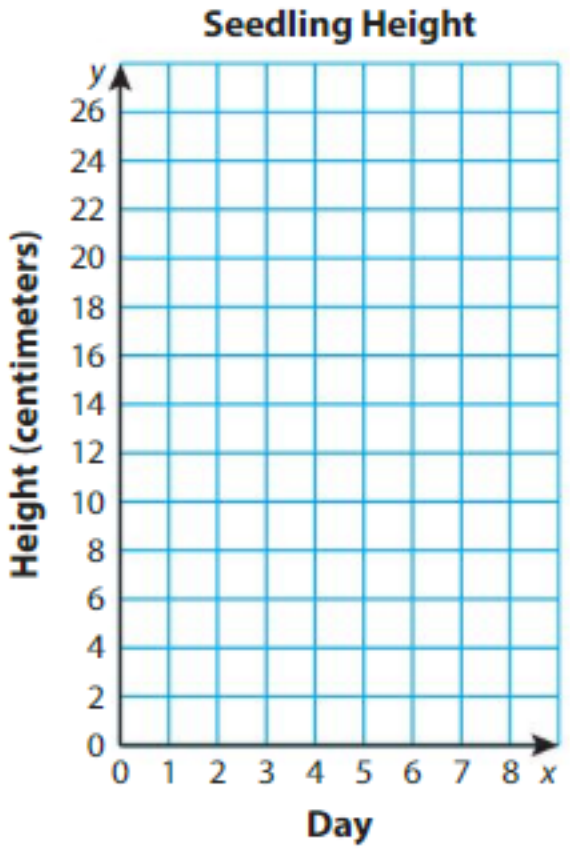
Use the graph.

3. The table shows the height of a seedling over 7 days. Make a line graph of the data.

Day	0	1	2	3	4	5	6	7
Height (centimeters)	0	2	4	8	18	22	24	26

Between which two days did the seedling grow the most? Explain.

How tall do you think the seedling will be after 8 days? Explain.

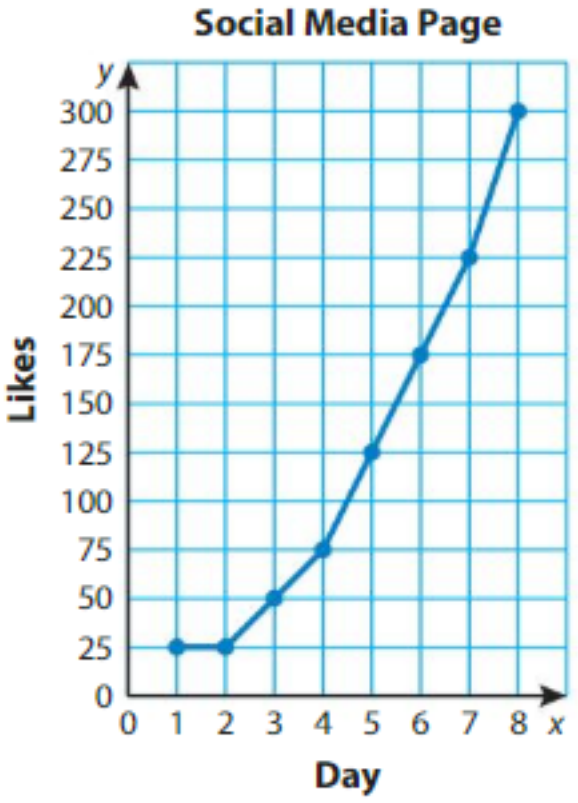


4. MP **Reasoning** Interpret the point (0, 0) in the context of the situation.

Use the graph.

5. The graph shows the total numbers of likes a social media page has over 8 days. How many likes does the page have after 4 days?

What is the difference of likes on Day 7 and Day 3?



6. DIG DEEPER! You track the likes between Days 7 and 8 by each hour. Does the total number of likes at every hour fall between 225 and 300? Explain.

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Think and Grow: Modeling Real Life



Example The table shows your heart rate during an exercise routine. Make a line graph of the data. Use the graph to estimate your heart rate after exercising for 15 minutes.

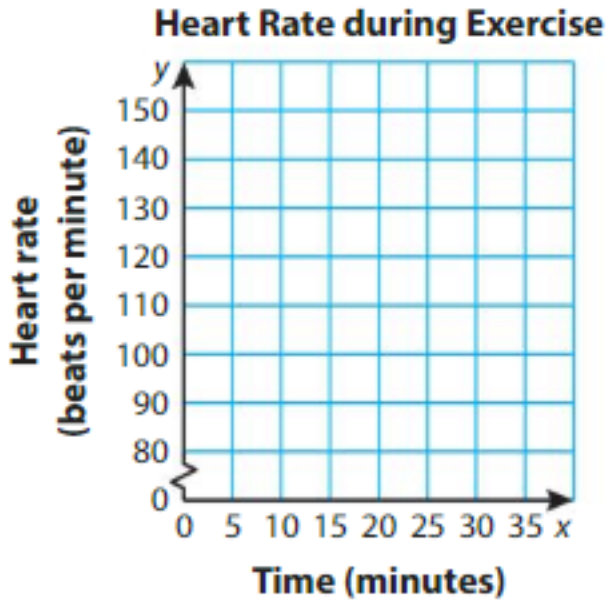
Time (minutes)	0	10	20	30	35
Heart Rate (beats per minute)	80	110	140	148	135

Step 1: Write the ordered pairs from the table.
(0, 80), (10, 110), (20, 140), (30, 148), (35, 135)

Step 2: For each axis, choose appropriate numbers to represent the data in the table. You can show a break in the vertical axis between 0 and 80 because there are no data values between 0 and 80.

Step 3: Write a title for the graph and label each axis.

Step 4: Plot a point for each ordered pair. Then connect the points with line segments.



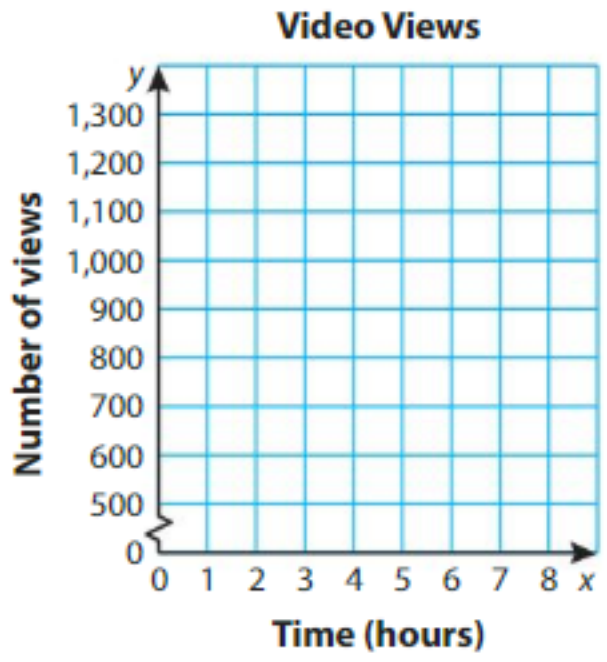
Use the line segment that connects (10, 110) and (20, 140) to estimate your heart rate after exercising for 15 minutes.

After exercising for 15 minutes, your heart rate is about _____ beats per minute.

Show and Grow

7. The table shows how many views a video has over several hours. Make a line graph of the data. Use the graph to estimate the total number of views the video has after 2 hours.

Time (hours)	1	3	5	6	7
Views	500	600	810	1,000	1,290



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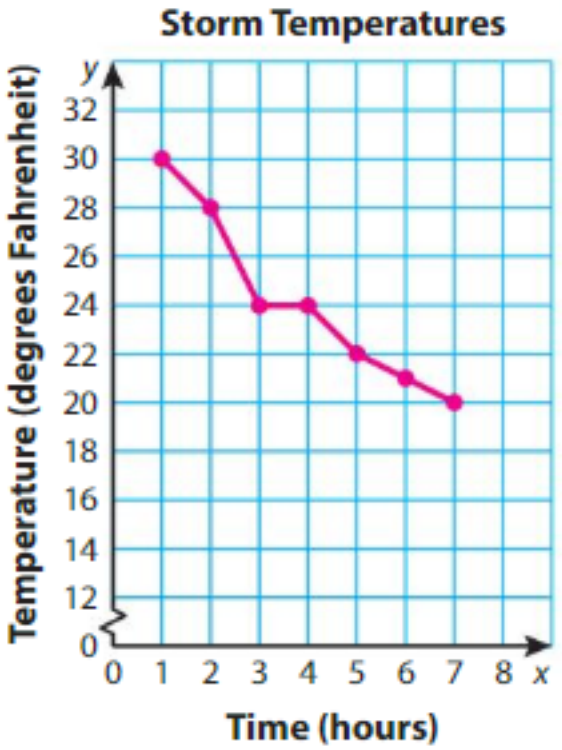
Name _____

Homework & Practice 12.5

Learning Target: Make and interpret line graphs.

Example The table shows the temperatures of a city over several hours during a snowstorm. Make a line graph of the data.

Time (hours)	1	2	3	4	5	6	7
Temperature (degrees Fahrenheit)	30	28	24	24	22	21	20



Between which two hours does the temperature decrease the most? Explain.

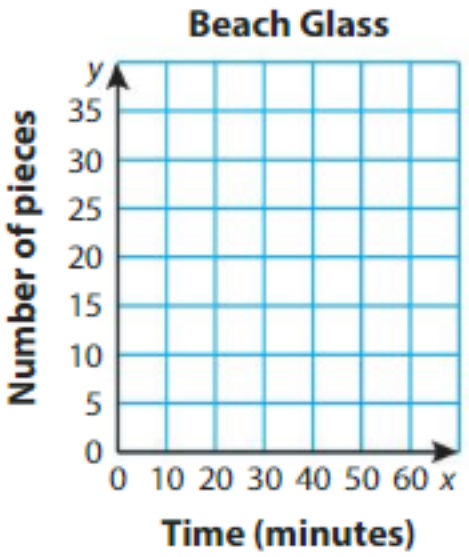
The greatest difference in temperatures occurs between the points (2, 28) and (3, 24). So, the temperature decreases the most between Hours 2 and 3.

Estimate the temperature at 4 hours and 30 minutes.

23 degrees Fahrenheit

1. The table shows the total number of pieces of beach glass you find during an hour at the beach. Make a line graph of the data.

Time (minutes)	10	20	30	40	50	60
Number of pieces	4	10	20	26	29	35



Between which two times did you find the most pieces of beach glass? Explain.

Estimate how many pieces you had after 25 minutes.

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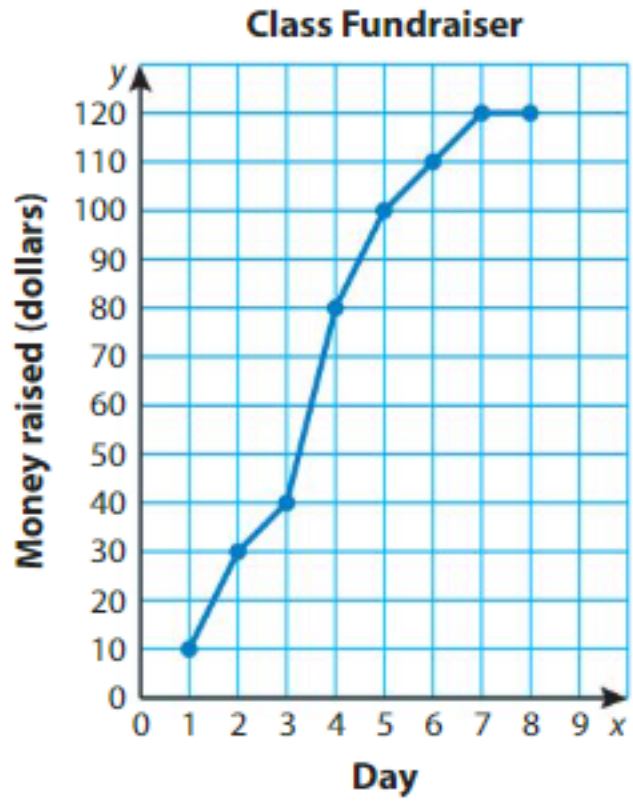
Use the graph.



2. The graph shows the total amounts of money your class raises over 8 days. How much money does your class raise after 6 days?

How much money does your class raise between Days 2 and 7?

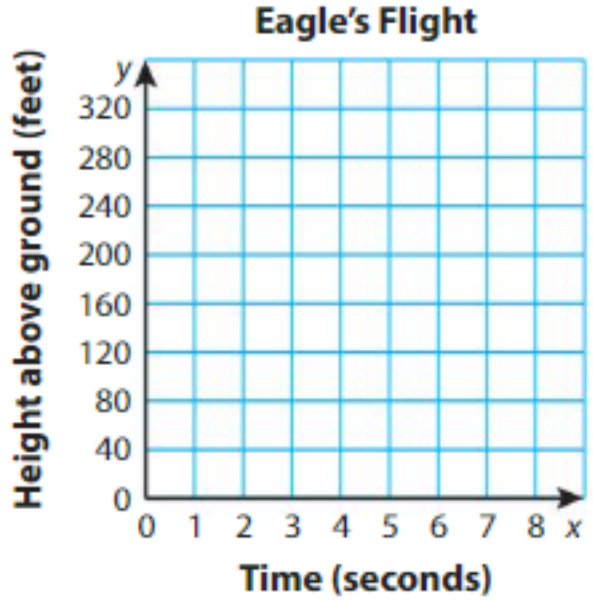
---

3. MP **Logic** Your friend says that your class raises $115 after 9 days. Explain why your friend's statement does *not* make sense.

Use the graph.

4. **Modeling Real Life** The table shows a bald eagle's heights above the ground after several seconds. Make a line graph of the data. Use the graph to estimate the eagle's height above the ground after 6 seconds.

Time (seconds)	1	2	5	7	8
Height Above Ground (feet)	40	80	200	240	260



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5. DIG DEEPER! The eagle flies past her nest, which is 120 feet above the ground. After how many seconds do you think the eagle flies past her nest? Explain.

Review & Refresh

Divide.

6. $1 \div \frac{1}{8} =$ _____

7. $3 \div \frac{1}{4} =$ _____

8. $5 \div \frac{1}{10} =$ _____

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Name _____

Numerical Patterns 12.6

Learning Target: Create and describe numerical patterns.

Success Criteria:

- I can create a numerical pattern.
- I can describe features of a numerical pattern.
- I can describe the relationship between two numerical patterns.

FLORIDA STANDARDS
MAFS.5.OA.2.3

Explore and Grow

Newton saves $10 each month. Descartes saves $30 each month. Complete each table. What patterns do you notice?

Newton:

Month	0	1	2	3	4	5
Amount Saved	$0	$10				

Descartes:

Month	0	1	2	3	4	5
Amount Saved	$0	$30				

MP **Repeated Reasoning** How much will Newton have saved when Descartes has saved $300? Explain your reasoning.

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Think and Grow: Numerical Patterns

Example You use 2 pounds of beef to make a batch of empanadas. Each batch makes eight servings. Complete the rule that relates the number of servings to the number of pounds of beef.



Batches	0	1	2	3	4	5
Beef (pounds)	0	2	4			
Number of Servings	0	8	16			

Step 1: Create each pattern and complete the table.

Use the rule "Add _____" to find the number of pounds of beef.

0, 2, 4, _____, _____, _____

Use the rule "Add _____" to find the number of servings.

0, 8, 16, _____, _____, _____

Step 2: Write ordered pairs that relate the number of servings to the number of pounds of beef.

(0, 0), (8, 2), (16, 4), _____, _____, _____

Step 3: Write a rule. As you make each batch, the number of pounds of beef is always _____ as much as the number of servings.

So, divide the number of servings by _____ to find the number of pounds of beef.



Show and Grow

1. Use the given rules to complete the table. Then complete the rule that relates the number of hours worked to the amount earned.

	Days	1	2	3	4	5
Add 5.	**Hours Worked**	5	10			
Add 40.	**Amount Earned**	$40	$80			

Multiply the number of hours worked by _____ to find the amount earned.

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Name _____

Apply and Grow: Practice

Use the given rules to complete the table. Then complete the rule.

2.

Add 14.
Add 2.

Gallons of Lemonade	1	2	3	4	5
Water (cups)	14	28			
Lemon Juice (cups)	2	4			

Divide the number of cups of water by _____ to find the number of cups of lemon juice.

3.

Add 15.
Add 30.

Days	1	2	3	4	5
Push-Ups	15	30			
Sit-Ups	30	60			

Multiply the number of push-ups by _____ to find the number of sit-ups.

4. Complete the rule. Then use the rule to complete the table.

Multiply the amount of money that Newton saves by _____ to find the amount of money that Descartes saves.

Weeks	0	1	2	3	. . .	9
Newton's Savings	$0	$4	$8	$12	. . .	$36
Descartes's Savings	$0	$12	$24	$36	. . .	

5. MP **Structure** The ordered pairs (3, 2), (6, 4), and (9, 6) relate the number of avocados to the number of plum tomatoes in a guacamole recipe. Use the relationship to complete the table.

Batches	1	2	3	. . .	6
Avocados	3			. . .	
Tomatoes	2			. . .	



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Think and Grow: Modeling Real Life



Example For each $1 bill you pay, you get 4 tokens and can play 2 games. You have 60 tokens. How many games can you play?

Think: What do you know? What do you need to find? How will you solve?

Use a rule to create each pattern. Use a table to organize the information.

Add _____.

Add _____.

Amount Exchanged	$1	$2	$3	$4
Tokens	4			
Games	2			

Write ordered pairs that relate the number of tokens to the number of games you can play.

(4, 2), _____, _____, _____

Write a rule. The number of games you can play is always _____ as much as the number of tokens.

So, divide the number of tokens by _____ to find the number of games you can play.

60 ÷ _____ = _____

So, you can play _____ games.

Show and Grow

6. Each day, you read 33 pages and your friend reads 11 pages. How many pages does your friend read when you read 396 pages?

7. **DIG DEEPER!** Each pack of trading cards has 1 hero card, 5 combination cards, and 30 action cards. You buy packs of trading cards and get 35 combination cards. How many hero cards and action cards do you get?

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Name _____

Homework & Practice 12.6

Learning Target: Create and describe numerical patterns.

Example A soccer team has two games and four practices each week. Complete the table. How does the number of games relate to the number of practices?

	Weeks	0	1	2	3	4	5
Add 2.	**Games**	0	2	4	6	8	10
Add 4.	**Practices**	0	4	8	12	16	20

Write ordered pairs that relate the number of games to the number of practices.

(0, 0), (2, 4), (4, 8), (6, 12), (8, 16), (10, 20)

Write a rule. As each week is completed, the number of games is always $\frac{1}{2}$ as much as the number of practices.

So, multiply the number of games by 2 to find the number of practices.

Use the given rules to complete the table. Then complete the rule.

1.

	Students	1	2	3	4	5
Add 10.	**Candles Sold**	10	20			
Add 80.	**Money Raised**	$80	$160			

Multiply the number of candles sold by _____ to find the amount of money raised.

2.

	Containers	1	2	3
Add 30.	**Servings**	30		
Add 600.	**Pretzels**	600		

Multiply the number of servings by _____ to find the number of pretzels.

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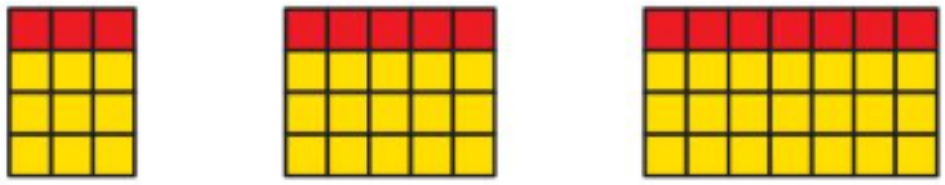
3. Complete the rule. Then use the rule to complete the table.

Divide the number of contestants by _____ to find the number of winners.

Games	1	2	3	. . .	15
Contestants	8	16	24	. . .	120
Winners	2	4	6	. . .	

4. MP **DIG DEEPER!** Draw Figure 4. How many red squares are in Figure 8? How many yellow squares are in Figure 8? Explain your reasoning.

Figure 1 Figure 2 Figure 3 Figure 4



5. **Modeling Real Life** Each person at a baseball game receives 3 raffle tickets and a $2 certificate for the team store. A group of people receives 39 raffle tickets. How much money in certificates does the group receive?

6. **DIG DEEPER!** Write a rule that relates the number of months to the cost of a gym membership. What is the cost of a 1-year membership?



Review & Refresh

Convert the mass.

7. 7 g = _____ mg

8. 92 g = _____ kg

Convert the capacity.

9. 800 mL = _____ L

10. 3 L = _____ mL

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Name _____

Graph and Analyze Relationships

12.7

Learning Target: Use a graph to describe the relationship between two numerical patterns.

Success Criteria:

- I can generate two numerical patterns.
- I can use two numerical patterns to write and plot ordered pairs in a coordinate plane.
- I can use a graph to describe the relationship between two numerical patterns.

FLORIDA STANDARDS

MAFS.5.OA.2.3
MAFS.5.G.1.2

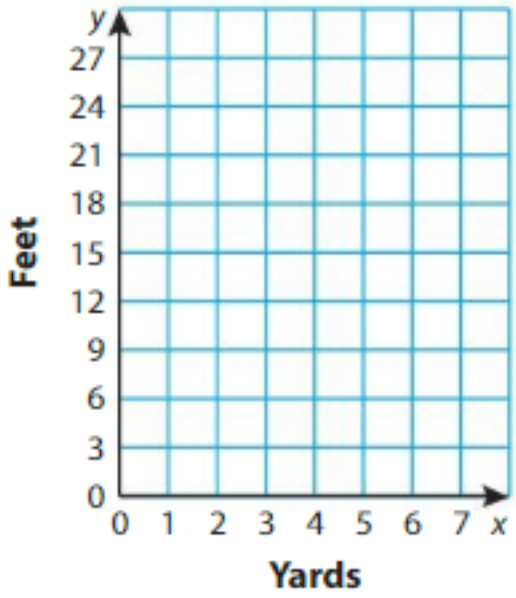
Explore and Grow

Complete each table and graph the data in the coordinate plane. What do you notice about the points?

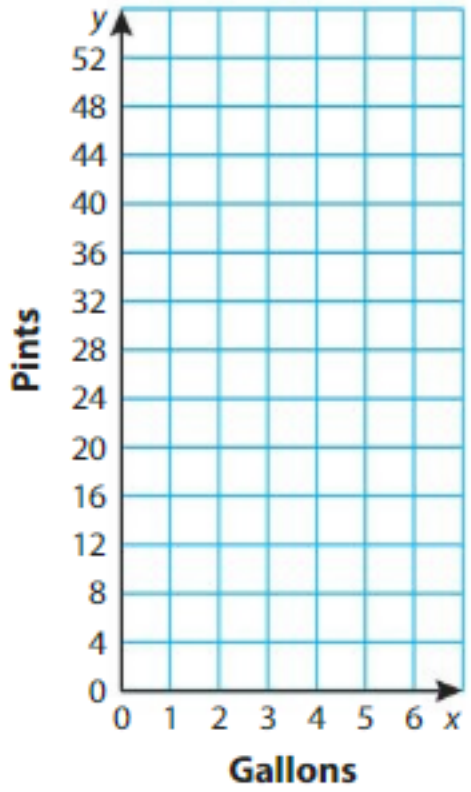
Yards	1	2	3	4	5
Feet	3				

Gallons	1	2	3	4	5
Pints	8				

Yards to Feet



Gallons to Pints



MP **Structure** How can you use the graphs to find the number of feet in 7 yards and the number of pints in 6 gallons? Explain your reasoning.

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Think and Grow: Graph and Analyze Relationships

Example For each glass of iced tea Newton makes, he uses 2 spoonfuls of iced-tea mix and 10 fluid ounces of water. Newton uses 16 spoonfuls of iced-tea mix. How many fluid ounces of water does he use?

Step 1: Find the first several numbers in the numerical patterns for the amounts of iced-tea mix and water.

Iced-Tea Mix (spoonfuls)	2	4				
Water (fluid ounces)	10	20				



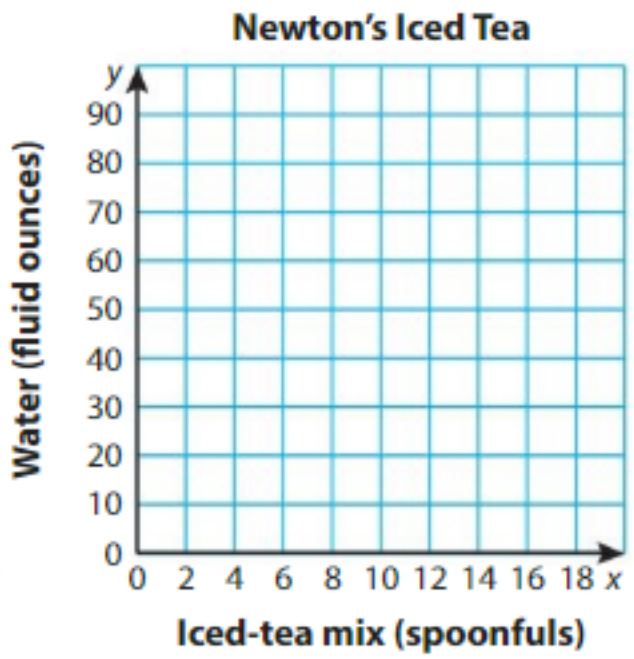
Step 2: Write the ordered pairs from the table.

(2, 10), (4, 20), _____,

_____, _____, _____

Step 3: Plot the ordered pairs. Connect the points with line segments.





Because the ordered pairs follow a pattern, you can extend the line to the point where the x-coordinate is 16.

When the x-coordinate is 16, the y-coordinate is _____.

So, Newton uses _____ fluid ounces of water.

Show and Grow

1. Use the graph above. Newton uses 18 spoonfuls of iced-tea mix. How many fluid ounces of water does he use? Explain your reasoning.

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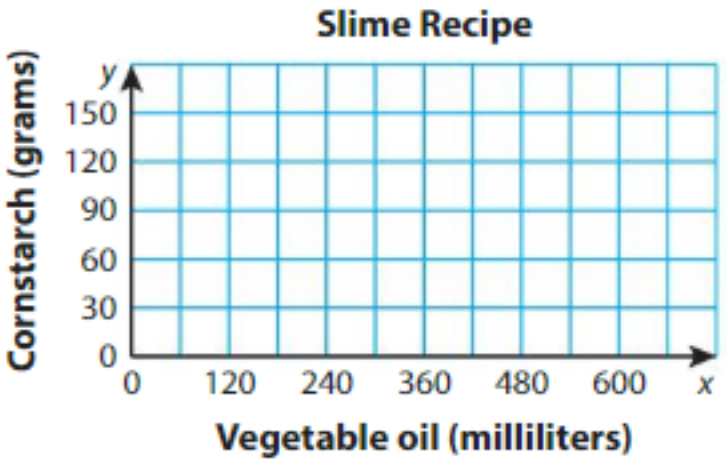
Name _____

Apply and Grow: Practice

Use the given information to complete the table. Describe the relationship between the two numerical patterns and plot the points.

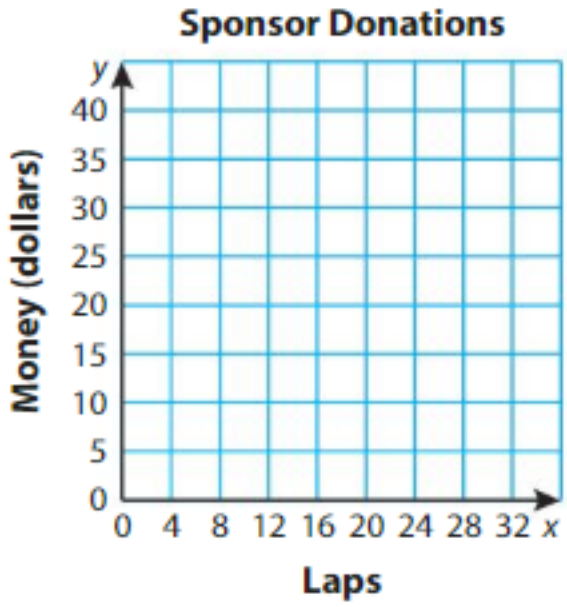
2. A slime recipes calls for 120 milliliters of vegetable oil and 30 grams of cornstarch. You measure 600 milliliters of vegetable oil. How many grams of cornstarch do you need?

Vegetable Oil (milliliters)	120	240		
Cornstarch (grams)	30	60		

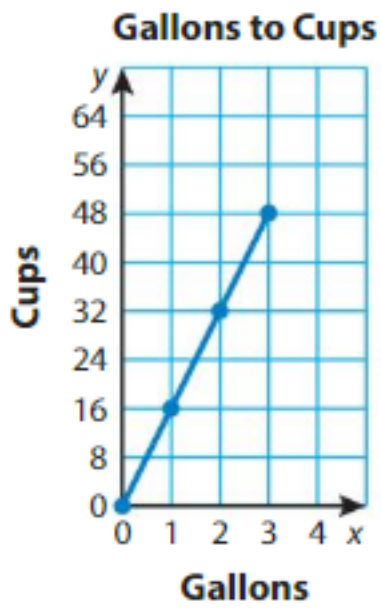


3. A sponsor donates $5 for every 4 laps walked around a track. How much money does the sponsor donate for 28 laps walked?

Laps	4	8	12			
Money (dollars)	5	10	15			



4. **Writing** How can you use the graph to determine the number of cups in 4 gallons?



5. **Number Sense** What does the ordered pair (0, 0) represent in the graph?

6. **DIG DEEPER!** Use the graph to determine the number of cups in $2\frac{1}{2}$ gallons.

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Think and Grow: Modeling Real Life



*Price is per person for up to 4 hours.

Example Some friends plan to go to a trampoline park for 2 hours. They want to go to the park that costs less money. Which park should they choose? What is the cost for each person?

Graph the relationship between time and cost at both parks. Park A has been done for you.

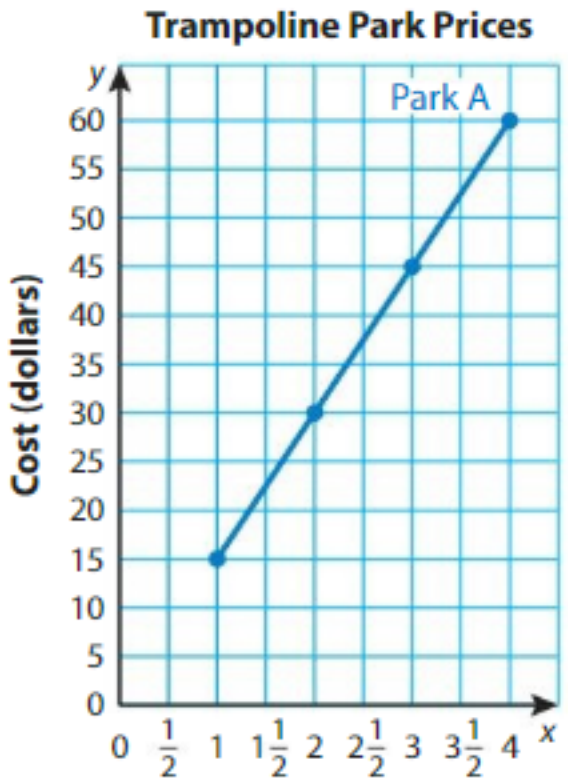
Step 1: Make a table for time and cost at Park B.

Time (hours)	$\frac{1}{2}$	1	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4
Cost (dollars)	10	20						

Step 2: Write the ordered pairs from the table.

$\left(\frac{1}{2}, 10\right)$, (1, 20), _____, _____,

_____, _____, _____, _____



Step 3: Plot the ordered pairs. Connect the points with line segments.

Use the graph to compare the costs for 2 hours at the parks.

Park	*x*-coordinate	*y*-coordinate
A	2	_____
B	2	_____

_____ < _____



So, the group of friends should choose Trampoline Park _____.

The cost for each person is $_____.

Show and Grow

7. On your map, every centimeter represents 20 kilometers. On your friend's map, every 2 centimeters represents 50 kilometers. On whose map does 6 centimeters represent a greater distance? How much greater? Explain.

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Name _____

Homework & Practice 12.7

Learning Target: Use a graph to describe the relationship between two numerical patterns.

Example A parking meter requires $0.25 for every 20 minutes of parking. You put $1.50 into the meter. How long can you park your car before the meter expires?

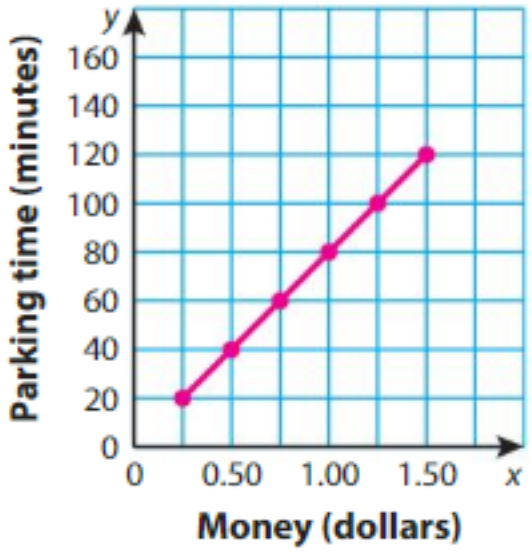
Step 1: Find the first several numbers in the numerical patterns for the amount of money and the parking time.

Money (dollars)	0.25	0.50	0.75	1.00	1.25
Parking Time (minutes)	20	40	60	80	100

Step 2: Write the ordered pairs from the table.

(0.25, 20), (0.50, 40), (0.75, 60), (1.00, 80), (1.25, 100)

Step 3: Plot the ordered pairs. Connect the points with line segments.



Because the ordered pairs follow a pattern, you can extend the line to the point where the *x*-coordinate is 1.50.

When the *x*-coordinate is 1.50, the *y*-coordinate is 120.

So, you can park your car 120 minutes before the meter expires.

1. Use the graph above. You plan to park your car for 140 minutes. How much money do you put into the meter?

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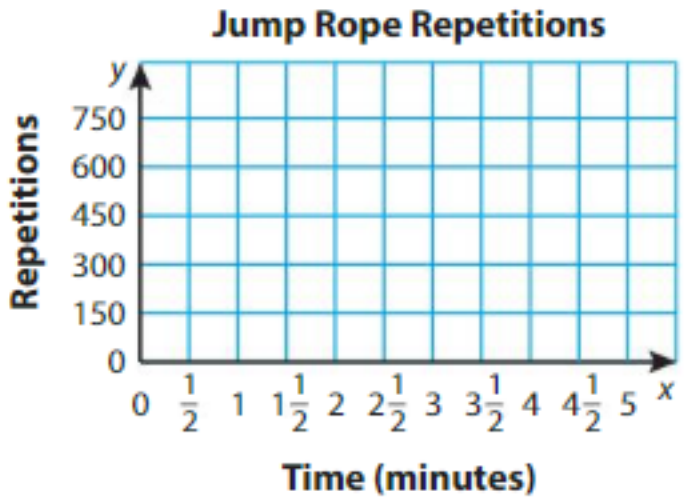
2. A boxer exercises by jumping rope. He completes 150 repetitions every minute. He completes 750 repetitions. For how many minutes does he jump rope?

Time (minutes)	1	2		
Repetitions	150	300		



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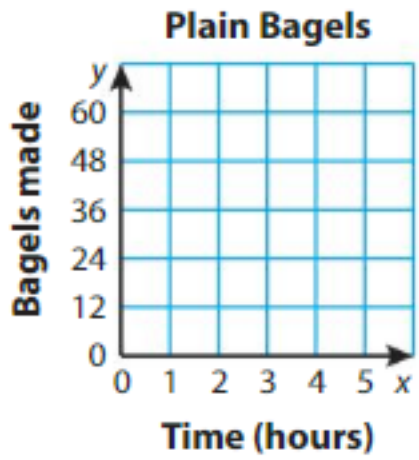
3. **YOU BE THE TEACHER** Your friend says a baker makes 60 plain bagels in 5 hours. Is your friend correct? Explain.

Time (hours)	1	2	3
Bagels Made	12	24	36



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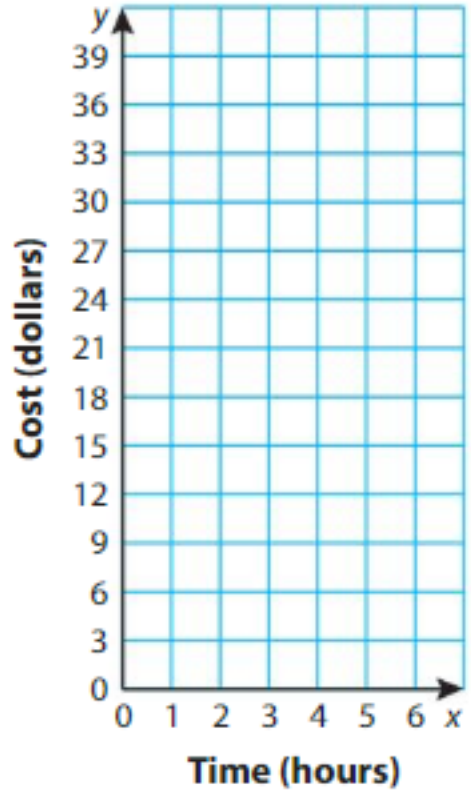
4. **Modeling Real Life** Some friends plan to rent bicycles for 6 hours. They want to choose the option that costs less money. Which option should they choose? What is the cost for each person?





Review & Refresh

Convert the length.

5. $3\frac{1}{3}$ ft = _____ in.

6. 6 mi = _____ yd

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Name _____

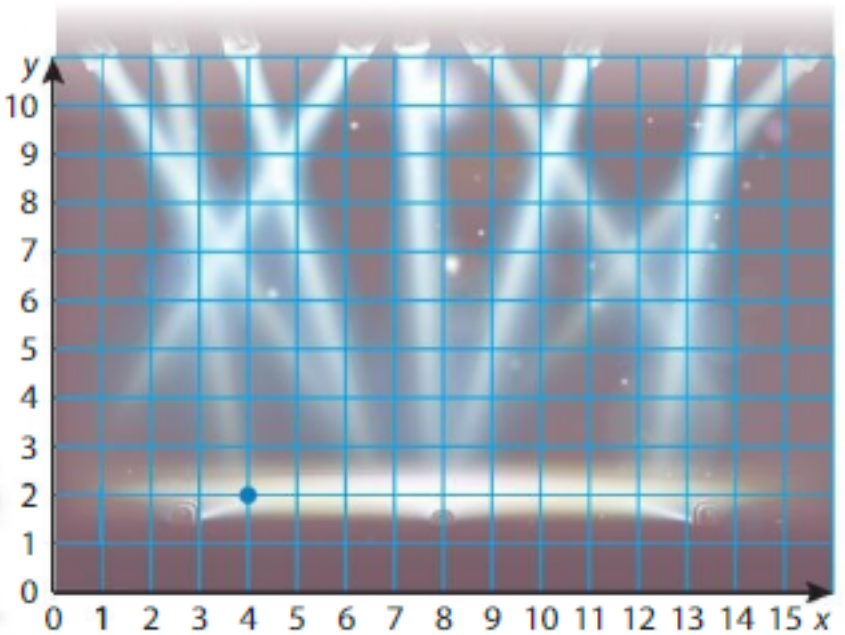
Performance Task 12

You use a series of commands on an app to create an animation of Descartes dancing and jumping.

1. a. Complete the animation commands to move Descartes. Plot the points to show his movement.

Animation Commands
Start at (4, 2).
Glide to (☐, ☐).
Glide to (☐, ☐).
Glide to (☐, ☐).
Glide to (☐, ☐).
Move to (4, 2).



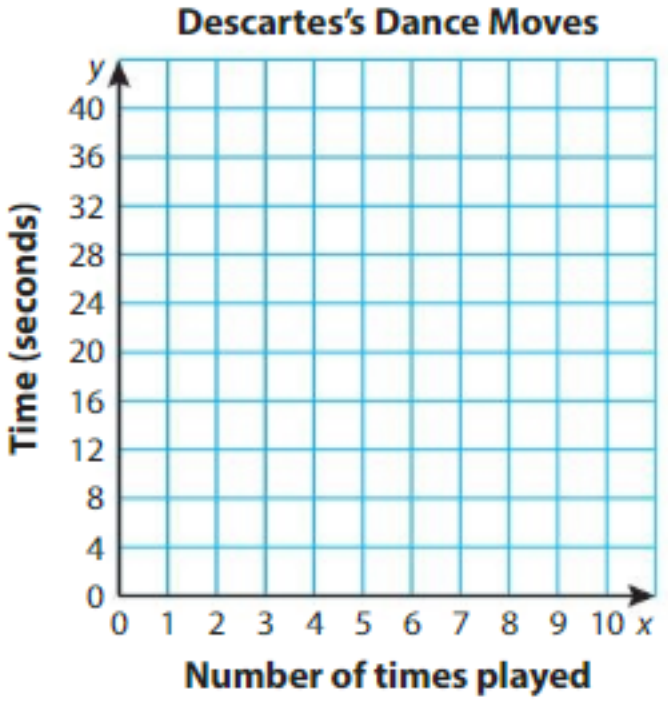


b. Connect the points. Describe the animation in your own words.

2. You play the animation commands to make Descartes dance.

a. It takes 4 seconds for Descartes to move through the animation commands 1 time. Complete the table and graph the data in the coordinate plane.

Number of Times Played	1	2	3	4	5
Time (seconds)	4				



b. You want Descartes to dance for an exact number of seconds. How can you find the number of times to play the animation commands? Use an example to justify your reasoning.

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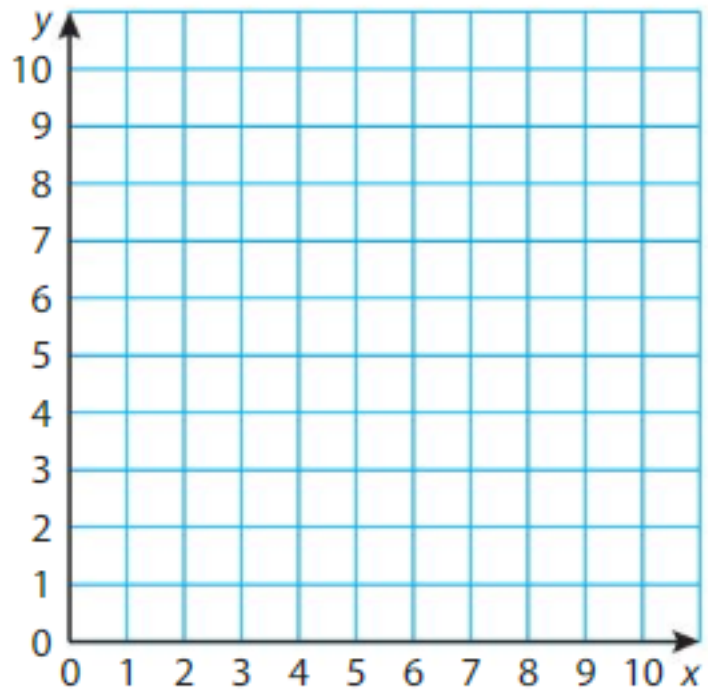
Treasure Hunt

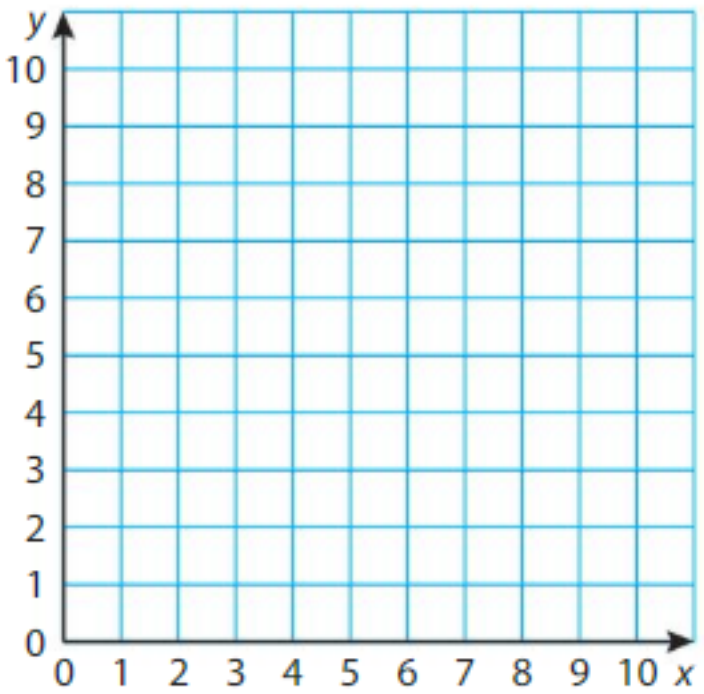
Directions:

1. Each player arranges four Treasure Hunt Gold Bars on the *My Treasure* coordinate plane, horizontally or vertically.
2. On your turn, name an ordered pair in the *Partner's Treasure* coordinate plane. If your partner says you found part of a gold bar, then plot the ordered pair in red. Otherwise, plot the ordered pair in black. Your turn is over.
3. On your partner's turn, if your partner finds part of a gold bar, then plot a red *X* on the ordered pair in the *My Treasure* coordinate plane. Tell your partner when all parts of a gold bar have been found.
4. The first player to find all parts of the partner's gold bars wins!









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Name _____

Chapter Practice 12

12.1 Plot Points in a Coordinate Plane

Use the coordinate plane to write the ordered pair corresponding to the point.

1. Point *A*

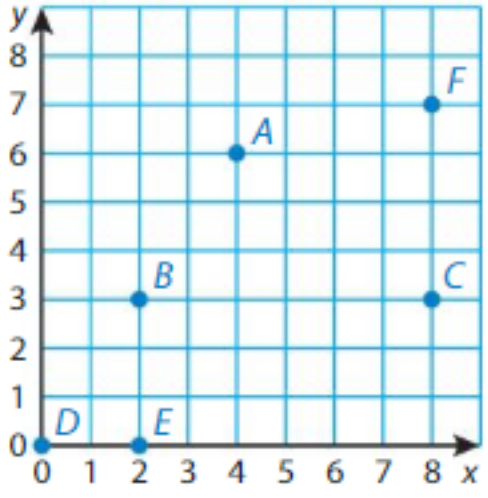
2. Point *D*

3. Point *B*

4. Point *E*

5. Point *C*

6. Point *F*



Plot and label the point in the coordinate plane above.

7. $N(3, 0)$

8. $P(1, 5)$

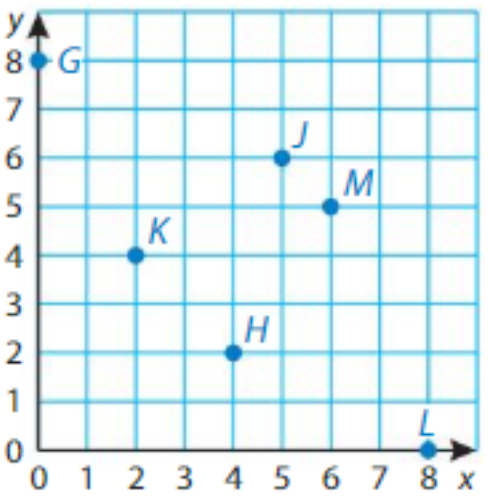
9. $R(2, 1)$

Name the point for the ordered pair.

10. (0, 8)

11. (5, 6)

12. (4, 2)



13. **Open-Ended** Use the coordinate plane above. Point *S* is 2 units from point *J*. Name two possible ordered pairs for Point *S*.

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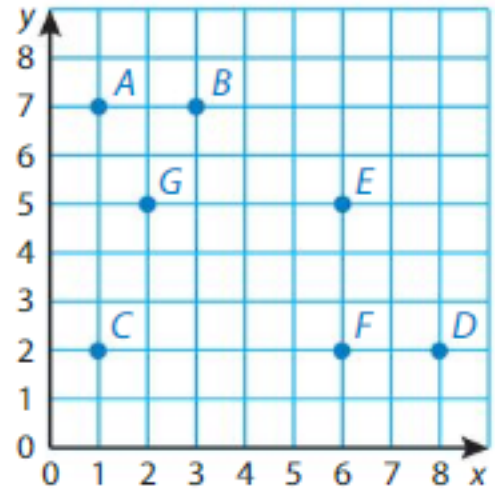
12.2 Relate Points in a Coordinate Plane

Find the distance between the points in the coordinate grid.



14. A and B

15. E and F

16. C and D

17. Which is longer, $\overline{AC}$ or $\overline{GE}$?

Find the distance between the points.

18. (0, 0) and (0, 4)

19. (3, 2) and (3, 9)

20. (0, 5) and (7, 5)

A line passes through the given points. Name two other points that lie on the line.

21. (0, 1) and (0, 7)

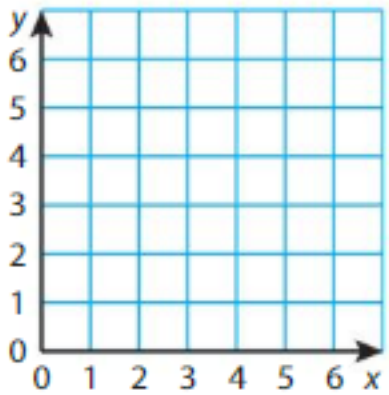
22. (5, 2) and (5, 8)

23. (6, 3) and (0, 3)

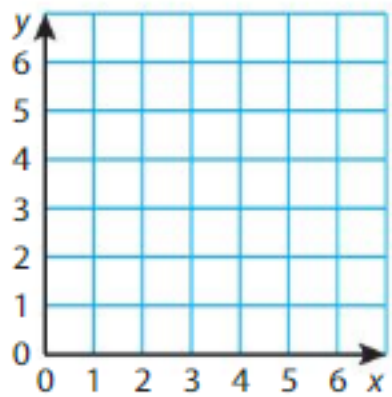
12.3 Draw Polygons in a Coordinate Plane

Draw the polygon with the given vertices in a coordinate plane. Then identify it.

24. $A(2, 5)$, $B(5, 5)$, $C(5, 0)$, $D(2, 0)$



25. $D(1, 3)$, $E(1, 5)$, $F(3, 6)$, $G(5, 5)$, $H(5, 3)$, $J(3, 2)$



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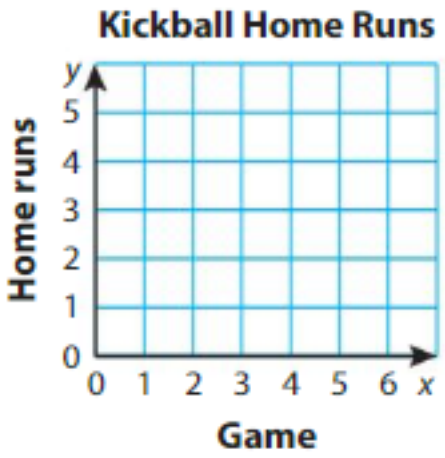
12.4 Graph Data

26. The table shows how many home runs your team scores in each of six kickball games. Graph the data.

Game	1	2	3	4	5	6
Home Runs	2	1	5	4	2	3



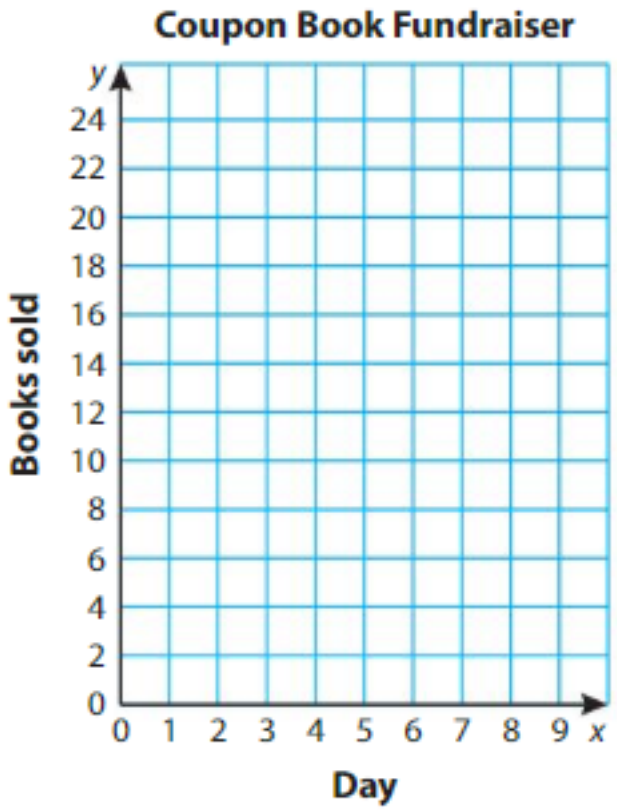
What does the point (6, 3) represent?

What is the difference of the greatest number of home runs and the least number of home runs? Explain.

12.5 Make and Interpret Line Graphs

27. The table shows the total numbers of coupon books you sell over 7 days. Make a line graph of the data.

Day	1	2	3	4	5	6	7
Books Sold	0	2	5	8	12	18	23



On which day do you sell the most books? Explain.

How many books do you think you sell after 9 days? Explain.

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12.6 Numerical Patterns

28. Use the given rules to complete the table. Then complete the rule.

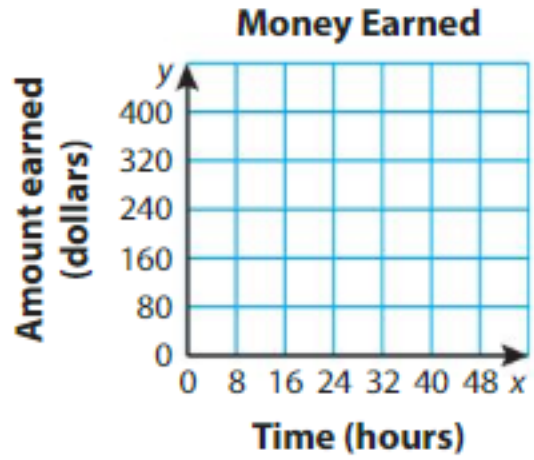
	Servings of Dip	1	2	3	4	5
Add 5.	Sugar-free Pudding Mix (ounces)	5	10			
Add 15.	Pumpkin (ounces)	15	30			

Multiply the number of ounces of pudding mix by _____ to find the number of ounces of pumpkin.

12.7 Graph and Analyze Relationships

29. An employee earns $80 every 8 hours. How much money does she earn after 40 hours?

Time (hours)	8	16		
Amount Earned (dollars)	80	160		



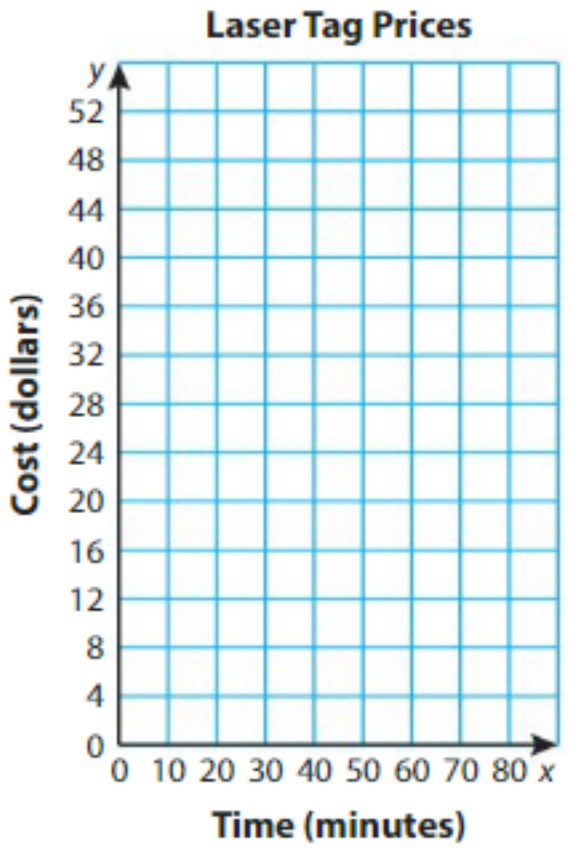
30. **Modeling Real Life** A group of friends wants to play laser tag for 60 minutes. They want to go to the facility that costs less money. Which facility should they choose? What is the cost for each person?

Facility A



Facility B





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Under
Volu

Ch

Ch

Name _____

13 Vocabulary

Review Words

area
perimeter

Organize It

Use the review words to complete the graphic organizer.

of a Rectangle	of a Rectangle
• The distance around a rectangle • $P = (2 \times \ell) + (2 \times w)$	• The amount of surface a rectangle covers • $A = \ell \times w$

Define It

Use your vocabulary cards to complete the puzzle.

Across

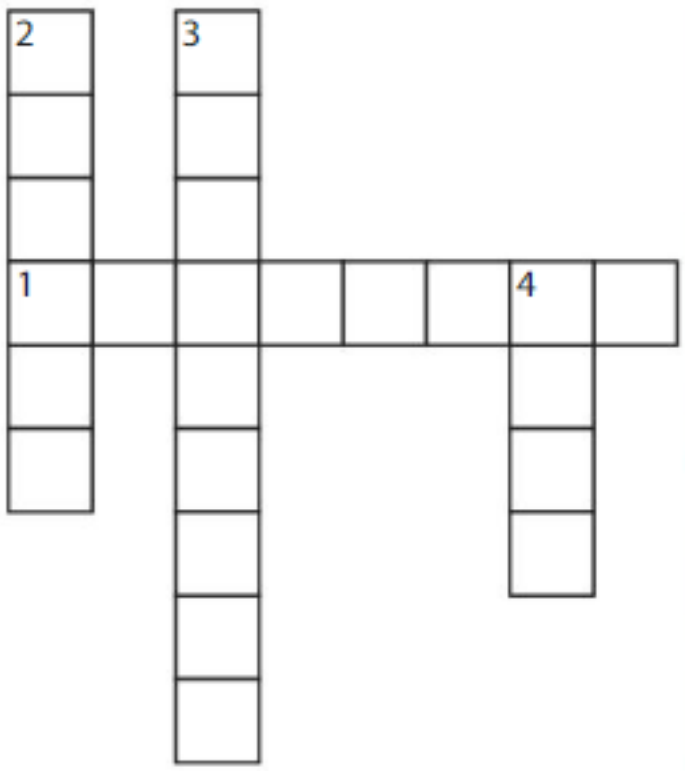
1. A cube that measures one unit on each side

Down

2. A measure of the amount of space that a solid figure occupies

3. A unit used to measure volume

4. The bottom face of a right rectangular prism



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Chapter 13 Vocabulary Cards

base

composite figure

cubic unit

right
rectangular prism

unit cube

volume

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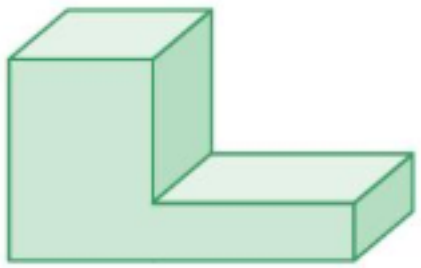
A figure that is made of two or more solid figures



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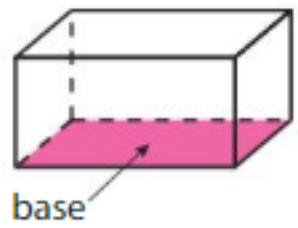
The bottom face of a right rectangular prism



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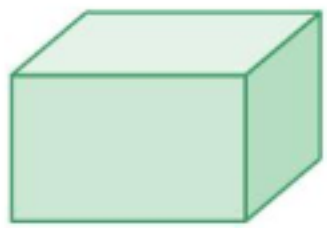
A solid figure with six rectangular faces



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A unit used to measure volume

cubic centimeter
cubic inch
cubic foot

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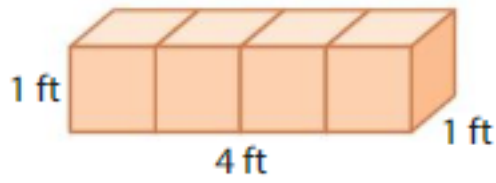
A measure of the amount of space that a solid figure occupies



The volume of the figure is 4 cubic feet.

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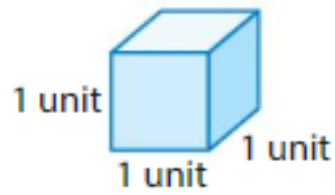
A cube that measures one unit on each side



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Name _____

Understand the Concept of Volume

13.1

Learning Target: Count to find volumes of solid figures.

Success Criteria:

- I can count the number of unit cubes in a figure.
- I can tell the volume of a solid figure in cubic units.
- I can identify units as cubic inches, cubic feet, or cubic centimeters.

FLORIDA STANDARDS

MAFS.5.MD.3.3a
MAFS.5.MD.3.3b
MAFS.5.MD.3.4

Explore and Grow

Use centimeter cubes to make each figure.

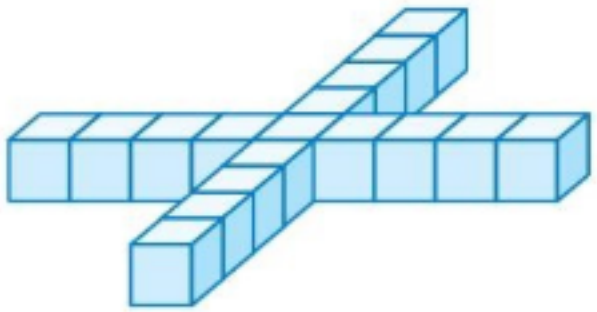

Figure 1

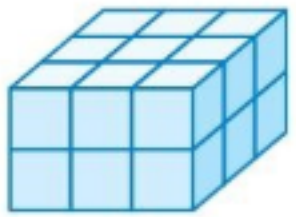

Figure 2

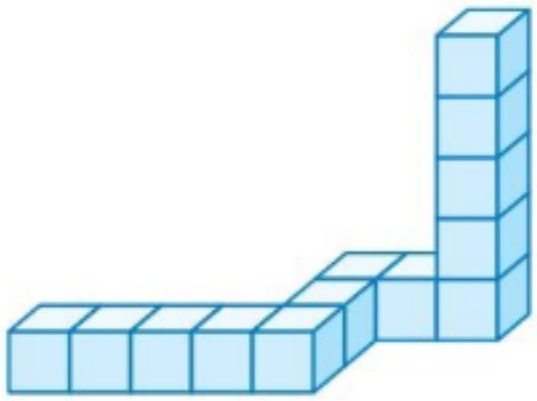

Figure 3

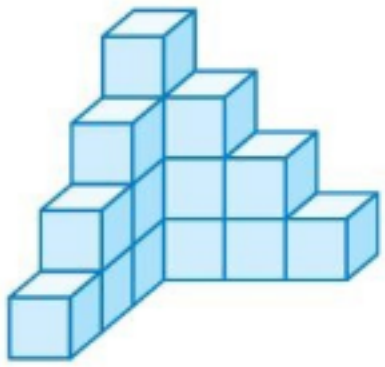

Figure 4

Which figure takes up the most space? Which figure takes up the least space? How do you know?

MP **Structure** Can two different figures take up the same amount of space? Explain.

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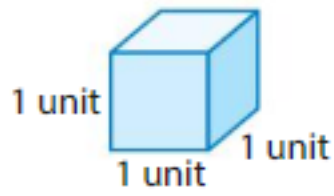
Think and Grow: Use Unit Cubes to Find Volume

Key Idea **Volume** is a measure of the amount of space that a solid figure occupies. The volume of a unit cube is 1 **cubic unit**. You can count unit cubes to find the volume of a solid figure.

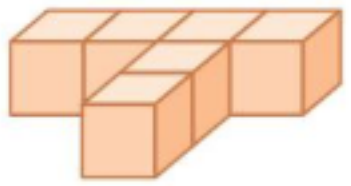
unit cube



Unit cubes can represent different standard units, such as cubic inches, cubic feet, or cubic centimeters.



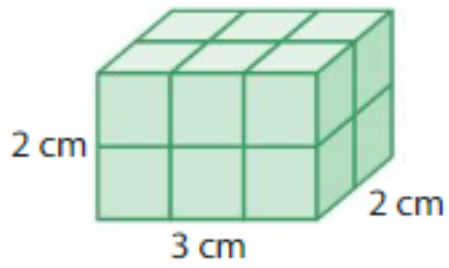
Example Find the volume of the figure.



The figure is made of _____ unit cubes.

So, the volume of the figure is _____ cubic units.

Example Find the volume of the figure.



Each unit cube has an edge length of _____.

So, each unit cube has a volume of _____.

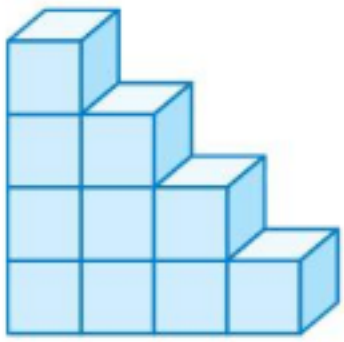
The figure is made of _____ unit cubes.

So, the volume of the figure is _____.

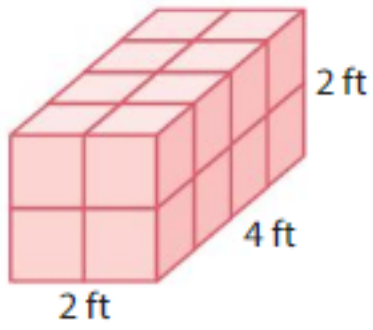
Show and Grow

Find the volume of the figure.

1. Volume = _____ cubic units



2. Volume = _____



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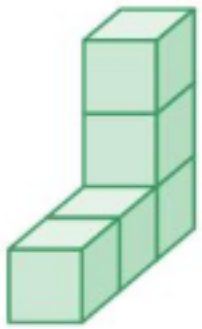
Name _____

Apply and Grow: Practice

Find the volume of the figure.

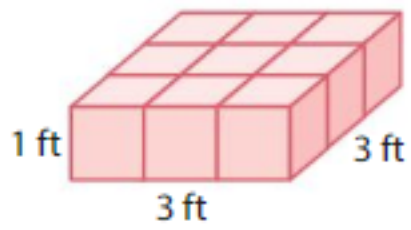
3. Volume = _____



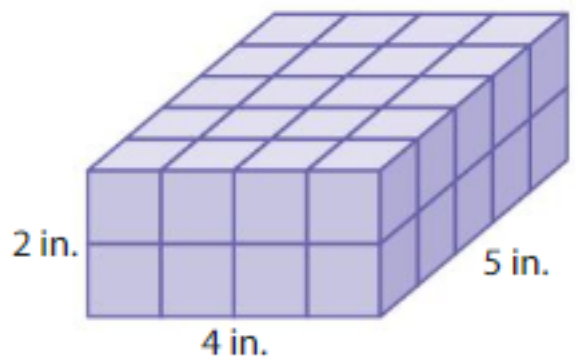
4. Volume = _____



5. Volume = _____



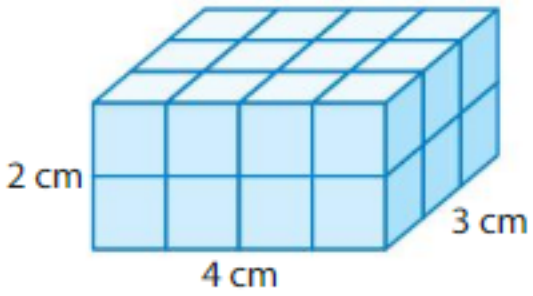
6. Volume = _____



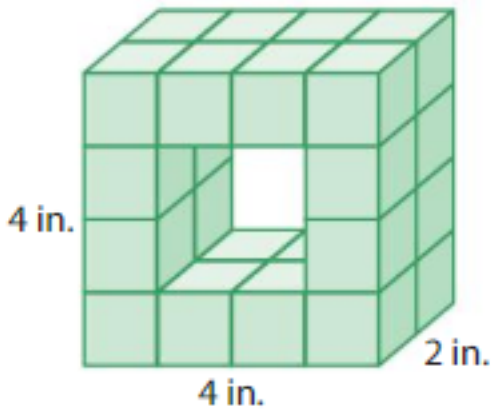
7. Cube-shaped shipping boxes, like the one shown, are packed into a van. They form a solid without any gaps or overlaps that is 3 feet long, 2 feet wide, and 3 feet tall. What is the volume of the solid formed?



8. **YOU BE THE TEACHER** Your friend says the volume of the figure is 12 cubic centimeters. Is your friend correct? Explain.



9. **DIG DEEPER!** What is the volume of the figure formed by the missing cubes?



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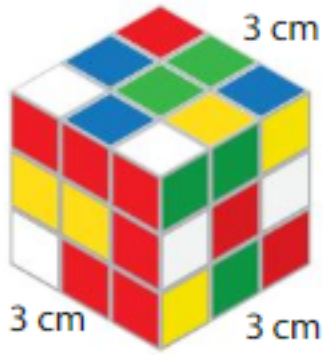
Think and Grow: Modeling Real Life

Example The puzzle is made of unit cubes. A box can hold 20 of the puzzles without any gaps or overlaps. What is the volume of the box?



Find the volume of one puzzle.

The puzzle is made of unit cubes that each have an edge length of _____.

So, each unit cube has a volume of _____.

One puzzle is made of _____ unit cubes.

So, the volume of one puzzle is _____.

Area is measured in square units, or units^2. Volume is measured in cubic units, or units^3.

Multiply the volume of one puzzle by the number of puzzles that can fit in the box.

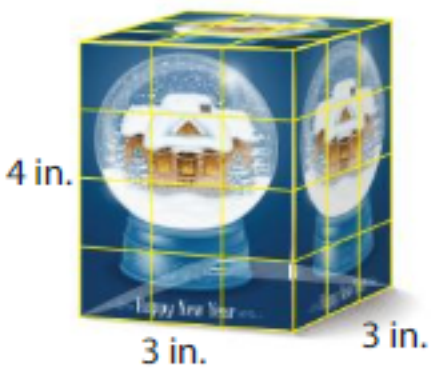


_____ × _____ = _____

So, the volume of the box is _____.

Show and Grow

10. A container holds 8 of the snowglobe boxes shown, without any gaps or overlaps. What is the volume of the container?



11. The shelving unit is made of six small compartments, one medium compartment, and one large compartment. Each small compartment has a length, a width, and a height of 1 foot. What is the volume of the shelving unit?



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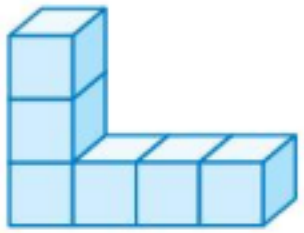
Name _____

Homework & Practice 13.1

Learning Target: Count to find volumes of solid figures.

Example Find the volume of the figure.



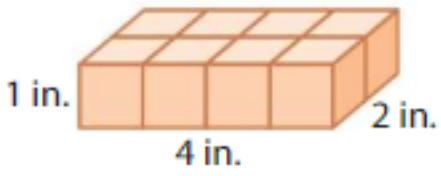
The figure is made of 6 unit cubes.

So, the volume of the figure is 6 cubic units.

Example Find the volume of the figure.

Each unit cube has an edge length of 1 inch.

So, each unit cube has a volume of 1 cubic inch.

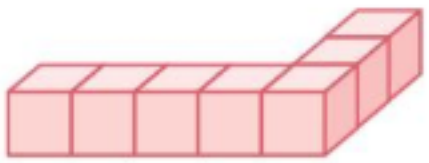


The figure is made of 8 unit cubes.

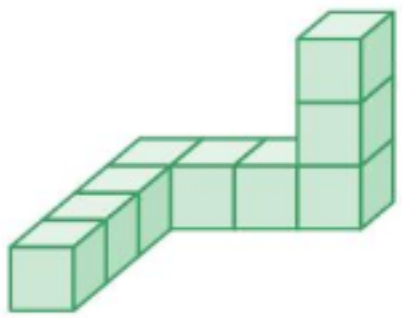
So, the volume of the figure is 8 cubic inches.

Find the volume of the figure.

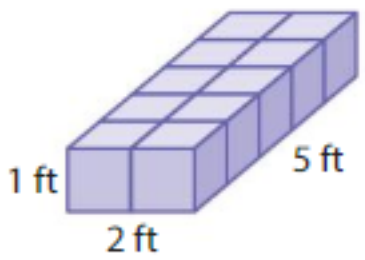
1. Volume = _____



2. Volume = _____



3. Volume = _____



4. Volume = _____



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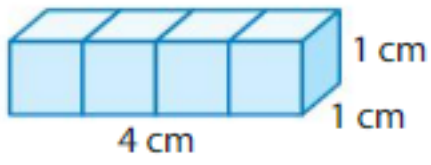
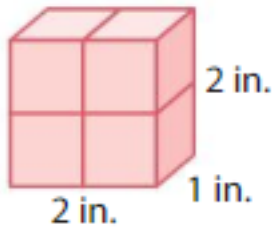
5. Cube-shaped boxes, like the one shown, are placed together for a display at a store. They form a solid without any gaps or overlaps that is 5 feet long, 4 feet wide, and 1 foot tall. What is the volume of the solid formed?

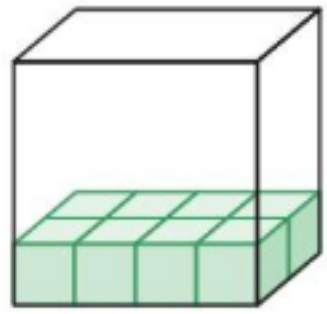


6. **YOU BE THE TEACHER** Your friend says the figures have the same volume. Is your friend correct? Explain.





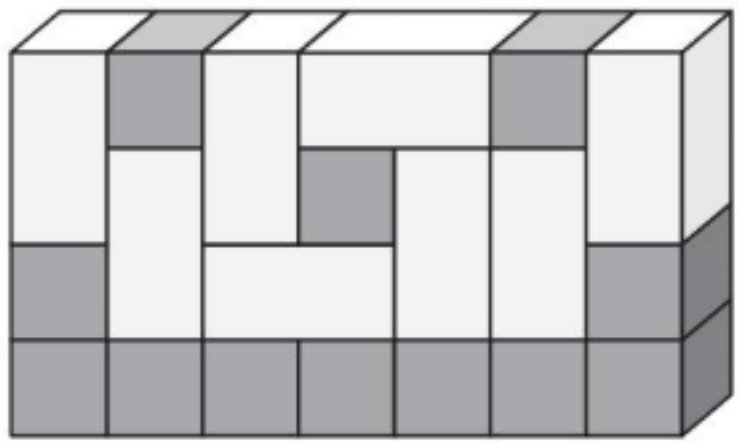
7. **DIG DEEPER!** Newton uses 32 centimeter cubes to build a solid. The base of the solid is shown. What is the height of the solid?



8. **Modeling Real Life** A container holds 27 of the spring toy boxes shown, without any gaps or overlaps. What is the volume of the container?



9. **Modeling Real Life** A store stacks boxes in an organized display. Each shaded box has a length, a width, and a height of 1 foot. What is the volume of the display?



Review & Refresh

Divide.

10. $3 \div 5 =$ _____

11. $1 \div 4 =$ _____

12. $7 \div 8 =$ _____

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Name _____

Find Volumes of Right Rectangular Prisms

13.2

Learning Target: Find volumes of right rectangular prisms.

Success Criteria:

- I can find the number of unit cubes in each layer of a rectangular prism.
- I can use the number of unit cubes in each layer to find the volume of a rectangular prism.

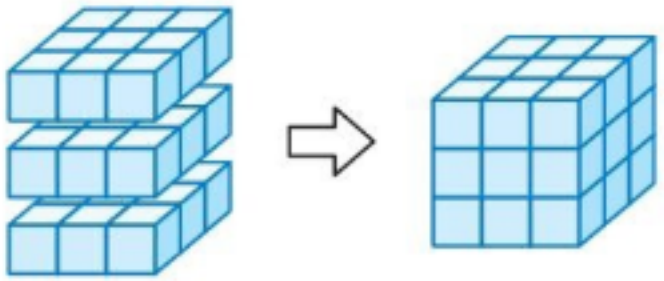
FLORIDA STANDARDS

MAFS.5.MD.3.4
MAFS.5.MD.3.5a

Explore and Grow

You can stack identical layers of unit cubes to build a rectangular prism.

Use centimeter cubes to make one layer of a rectangular prism. Then stack identical layers and complete the table.



Number of Layers	Volume of One Layer (cubic centimeters)	Volume of Prism (cubic centimeters)
1		
2		
3		
4		

MP **Precision** Explain the relationship among the values in each row of the table.

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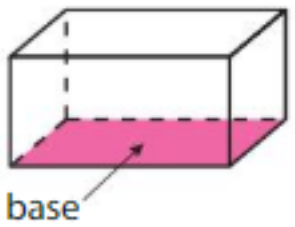
Think and Grow: Find Volumes of Right Rectangular Prisms

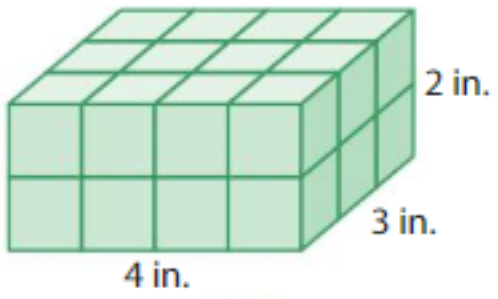
Key Idea A **right rectangular prism** is a solid figure with six rectangular faces.

right rectangular prism



To find the volume of a right rectangular prism, multiply the number of unit cubes that cover the **base** by the number of layers of unit cubes.

Example Find the volume of the rectangular prism.



Each unit cube has an edge length of _____.

So, each unit cube has a volume of _____.

Find the number of unit cubes in a base layer.
Then multiply by the number of layers to find the volume.

A base layer is made of _____ × _____ = _____ unit cubes.

The prism is made of _____ layers of unit cubes.

So, the prism is made of _____ × _____ = _____ unit cubes.

The volume of the prism is _____.

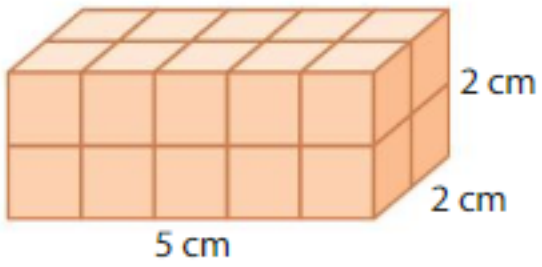
You can also count unit cubes to find the volume of the prism.



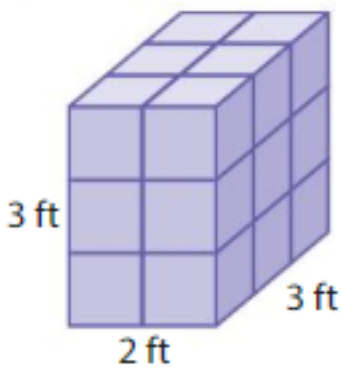
Show and Grow

Find the volume of the rectangular prism.

1. Volume = _____



2. Volume = _____



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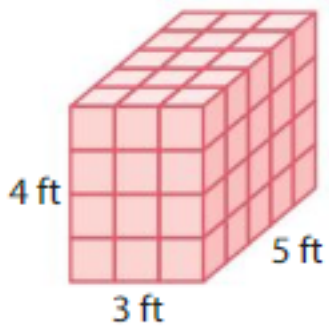
Name _____

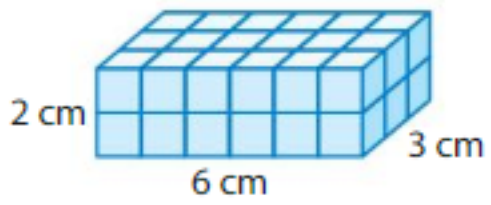
Apply and Grow: Practice

Find the volume of the rectangular prism.

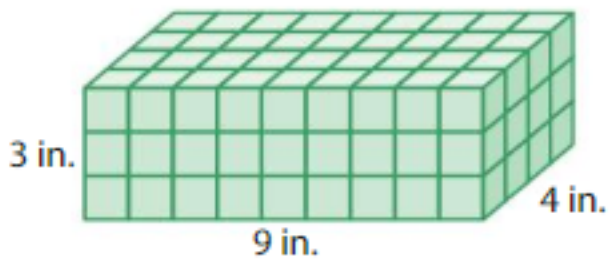
3. Volume = _____



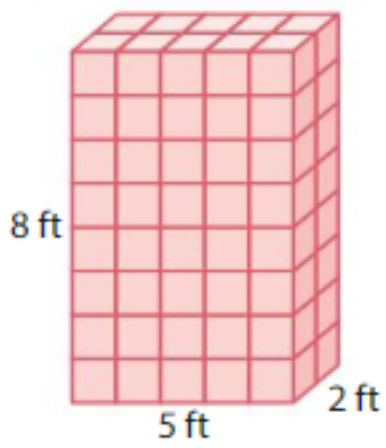
4. Volume = _____



5. Volume = _____



6. Volume = _____

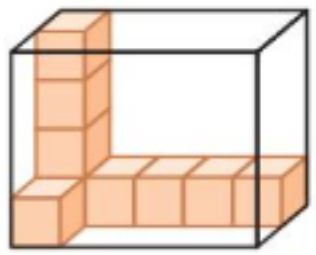


7. A rectangular prism is made of unit cubes, like the one shown. The prism is 6 centimeters long, 3 centimeters wide, and 4 centimeters tall. What is the volume of the prism?



8. MP **Structure** What happens to the volume of a rectangular prism when you double its height? Justify your answer by giving an example.

9. DIG DEEPER! How many unit cubes can fit inside the rectangular prism? Explain.



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Think and Grow: Modeling Real Life

Example A package containing video games has a volume of 150 cubic inches. The diagram shows the number of packages that can fit in a shipping box. Estimate the volume of the shipping box.



Find the number of packages in a base layer of the shipping box. Then multiply by the number of layers to find the total number of packages.

A base layer of the shipping box can hold $2 \times 3 = 6$ packages. There are 4 layers. So, the shipping box holds $4 \times 6 = 24$ packages.

Multiply the volume of 1 package by the number of packages that fit in the shipping box.

24 $\times$ _____ = _____ cubic inches

So, the volume of the shipping box is about _____ cubic inches.

Show and Grow

10. A book has a volume of 91 cubic inches. The diagram shows the number of books that can fit in a container. Estimate the volume of the container.



11. **DIG DEEPER!** Your teacher stores 12 of the crates in a supply closet. The closet is 3 feet long, 2 feet wide, and 7 feet tall. How much extra space is in the closet?



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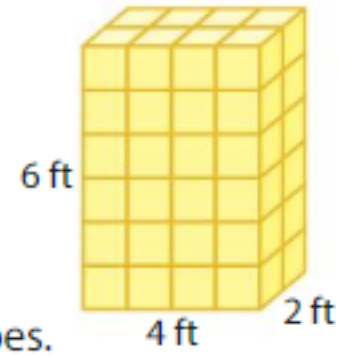
Name _____

Homework & Practice 13.2

Learning Target: Find volumes of right rectangular prisms.

Example Find the volume of the rectangular prism.



Find the number of unit cubes in a base layer. Then multiply by the number of layers to find the volume.

A base layer is made of 4 × 2 = 8 unit cubes.

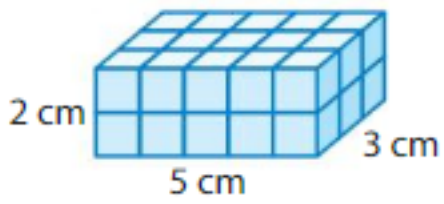
The prism is made of 6 layers of unit cubes.

So, the prism is made of 8 × 6 = 48 unit cubes.

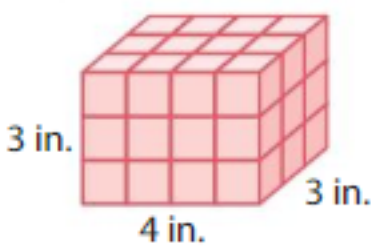
The volume of the prism is 48 cubic feet.

Find the volume of the rectangular prism.

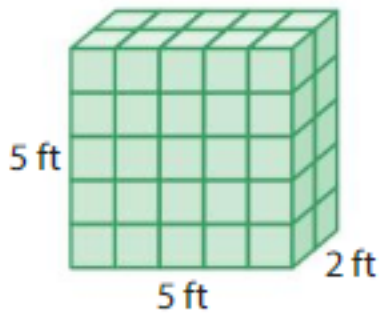
1. Volume = _____



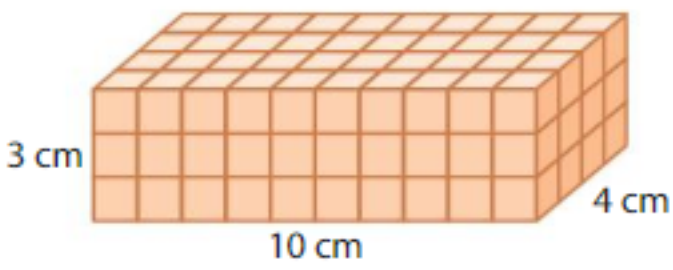
2. Volume = _____



3. Volume = _____



4. Volume = _____



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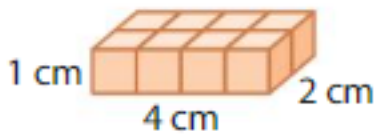
5. A rectangular prism is made of unit cubes, like the one shown. The prism is 7 inches long, 2 inches wide, and 4 inches tall. What is the volume of the prism?

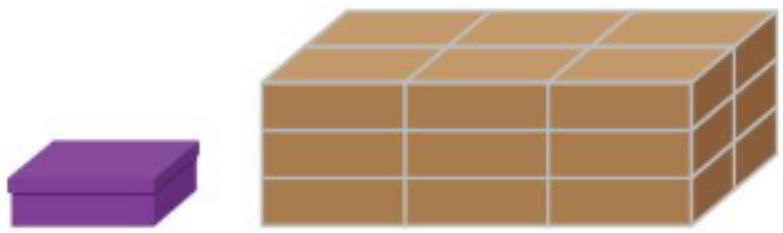


6. MP **Reasoning** A cube has a volume of 27 cubic inches. What is the edge length of the cube?

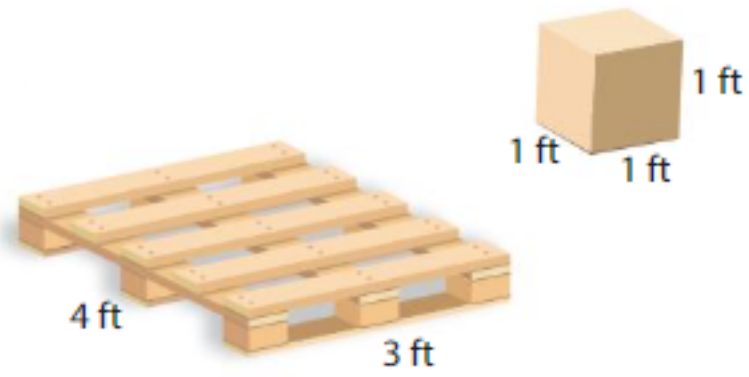
7. MP **Reasoning** You, Newton, and Descartes each build the rectangular prism shown. You stack all three prisms on top of each other. What is the volume of the new prism? How many times greater is the volume of the new prism than the volume of your original prism?



8. **Modeling Real Life** A shoe box has a volume of 336 cubic inches. The diagram shows the number of shoe boxes that can fit in a shipping box. Estimate the volume of the shipping box.



9. **Modeling Real Life** The wooden pallet can hold a maximum of 5 layers of boxes. A worker places 48 boxes, like the one shown, onto the pallet with no gaps. How many more boxes can fit?



Review & Refresh

Use a common denominator to write an equivalent fraction for each fraction.

10. $\frac{2}{3}$ and $\frac{5}{9}$

11. $\frac{1}{4}$ and $\frac{3}{7}$

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Name _____

Apply the Volume Formula 13.3

Learning Target: Use a formula to find volumes of rectangular prisms.

Success Criteria:

- I can write a formula for the volume of a rectangular prism.
- I can explain how to use the area of the base to find the volume of a rectangular prism.
- I can use a formula to find the volume of a rectangular prism.

FLORIDA STANDARDS

MAFS.5.MD.3.5a
MAFS.5.MD.3.5b

Explore and Grow

Work with a partner. Use centimeter cubes to create several different rectangular prisms, each with a volume of 12 cubic centimeters. Record your results in the table.



Base Length (centimeters)	Base Width (centimeters)	Height (centimeters)

What do you notice about the dimensions of each prism?

MP **Structure** How can you find the volume of a rectangular prism without using unit cubes?

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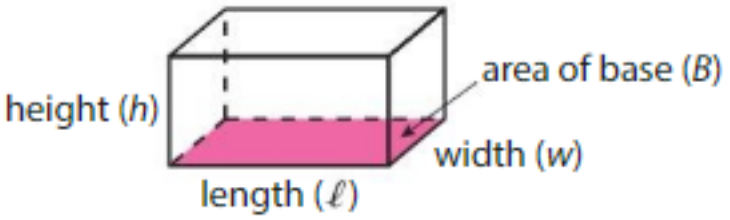
Think and Grow: Use a Formula to Find Volume

Key Idea You can use the length, width, and height of a rectangular prism to find its volume.



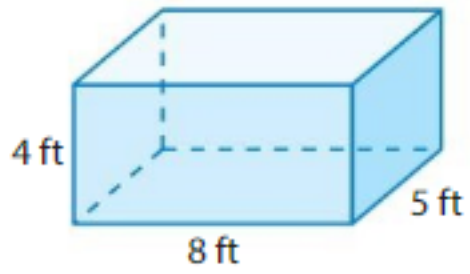
Volume of a Rectangular Prism

$$V = \underbrace{\ell \times w}_{B} \times h$$

B ← area of base

V = volume, ℓ = length, w = width, h = height

Example Find the volume of the rectangular prism.



Use the formula $V = \ell \times w \times h$.

The length is _____ feet, the width is _____ feet,

and the height is _____ feet.

$V = \ell \times w \times h$ Formula for volume of a rectangular prism

$= \_\_\_\_ \times \_\_\_\_ \times \_\_\_\_$

$= \_\_\_\_ \times \_\_\_\_$

$= \_\_\_\_$

The volume is _____.

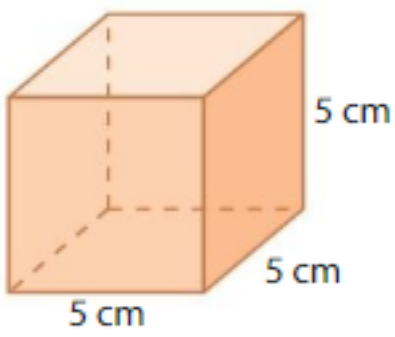
You can also use the formula $V = B \times h$, where $B = \ell \times w$.



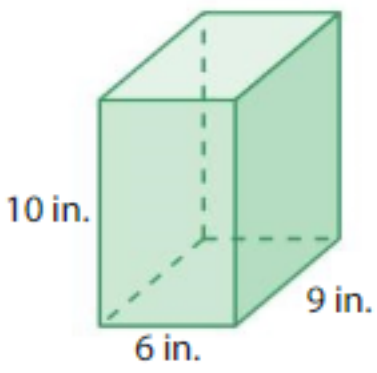
Show and Grow

Find the volume of the rectangular prism.

1.



2.



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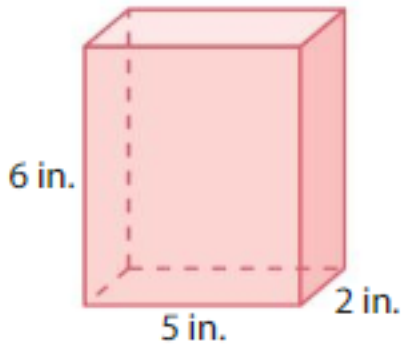
Name _____

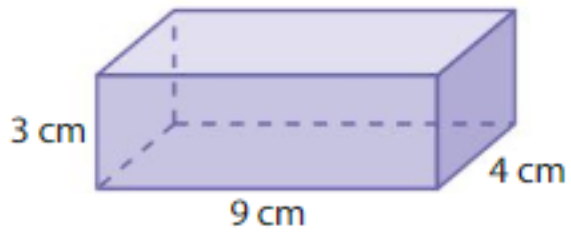
Apply and Grow: Practice

Find the volume of the rectangular prism.

3.



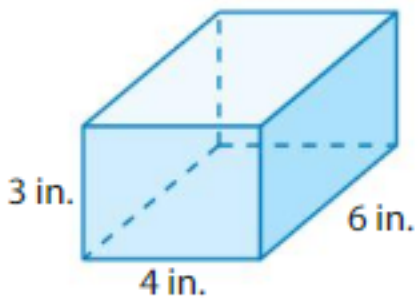
4.

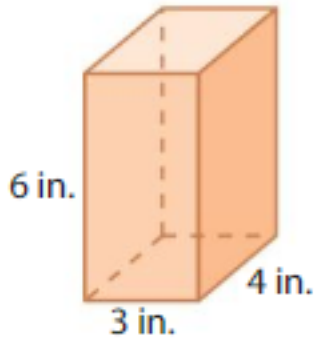


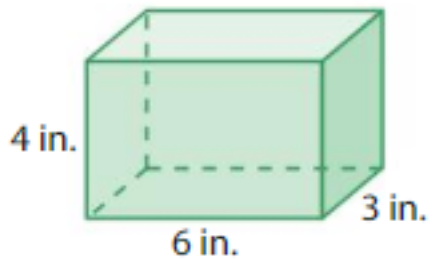
5. Newton's dog house is a rectangular prism. The house is 5 feet long, 4 feet wide, and 5 feet tall. What is the volume of the house?

6. A hole dug for an in-ground swimming pool is a rectangular prism. The hole is 20 feet long, 10 feet wide, and 6 feet tall. What is the volume of the hole?

7. MP **Structure** Compare the dimensions and volumes of the three rectangular prisms. What do you notice?







8. DIG DEEPER! What is the volume of Newton's rectangular prism?



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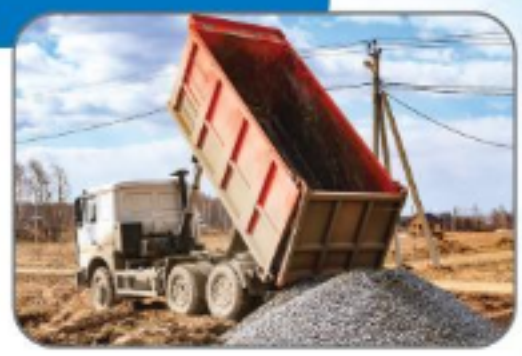
Think and Grow: Modeling Real Life



Example The dump truck bed is a rectangular prism.
The area of the base is 8 square yards. The height is 2 yards.
The driver needs to transport 18 cubic yards of gravel.
Can he transport all of the gravel at once?

Use a formula to find the volume of the dump truck bed.

$V = B \times h$ Formula for volume of a rectangular prism

$= \_\_\_\_ \times \_\_\_\_$

$= \_\_\_\_$

The volume of the dump truck bed is _____.

Compare the volume of the bed to the amount of gravel.

_____ ◯ 18

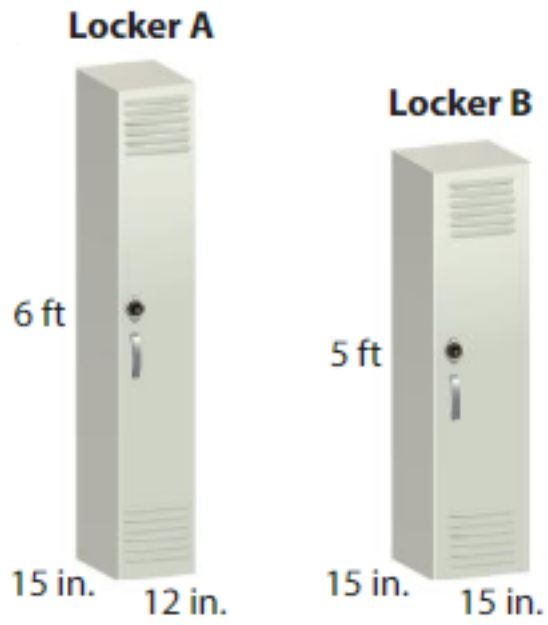
So, the driver _____ transport all of the gravel at once.

Show and Grow

9. The aquarium is a rectangular prism. The area of the base is 288 square inches. Can the aquarium hold 4,500 cubic inches of water? Explain.



10. DIG DEEPER! A principal orders two types of lockers for the school. Which locker has a greater volume? How much greater?



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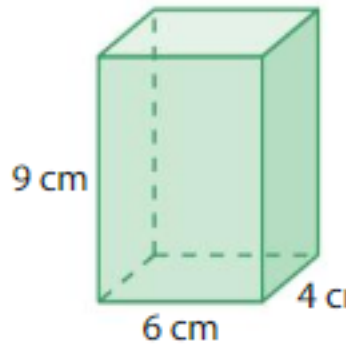
Name _____

Homework & Practice 13.3

Learning Target: Use a formula to find volumes of rectangular prisms.

Example Find the volume of the rectangular prism.



Use the formula $V = \ell \times w \times h$.

The length is 6 centimeters,
the width is 4 centimeters,
and the height is 9 centimeters.

$V = \ell \times w \times h$ Formula for volume of a rectangular prism

$= 6 \times 4 \times 9$

$= 24 \times 9$

$= 216$

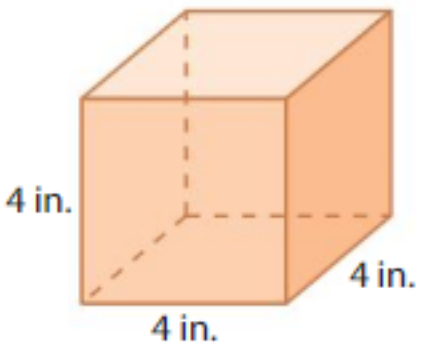
The volume is 216 cubic centimeters.

You can also use the formula $V = B \times h$, where $B = \ell \times w$.

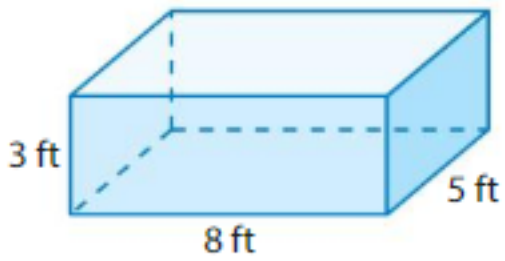


Find the volume of the rectangular prism.

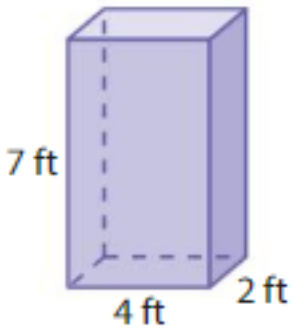
1.



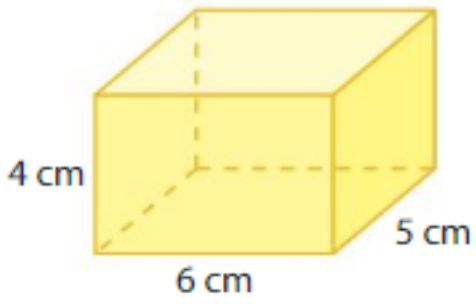
2.



3.



4.



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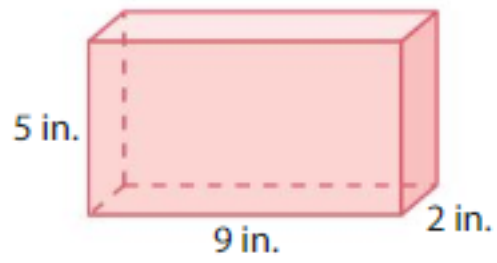
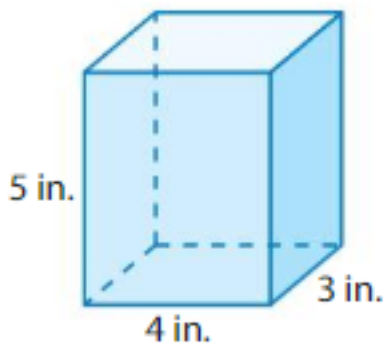
5. A toy chest is a rectangular prism. The chest is 4 feet long, 2 feet wide, and 2 feet tall. What is the volume of the chest?

6. **YOU BE THE TEACHER** Your friend uses the formula $V = B \times h$ and finds $V = 10 \times 9 = 90$ cubic inches. Is your friend correct? Explain.

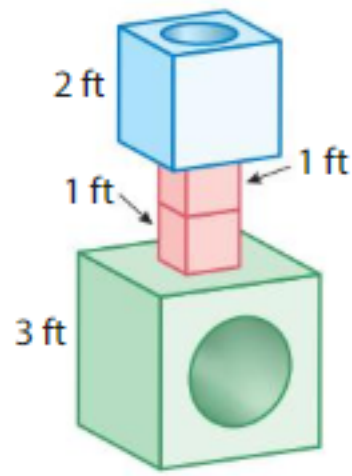


7. **Number Sense** Find the volume of the rectangular prism. Then double the dimensions of the prism and find the new volume. How does the new volume compare to the original volume?



8. **Modeling Real Life** A sandbox is a rectangular prism. The area of the base is 3,600 square inches. The height is 11 inches. You add 38,000 cubic inches of sand to the box. Do you fill the sandbox to the top? Explain.

9. **DIG DEEPER!** Each piece of Descartes's clubhouse is a cube. What is the volume of the clubhouse? Explain.



Review & Refresh

Find the quotient. Then check your answer.

10. $3.38 \div 2.6 =$ _____

11. $6.12 \div 1.53 =$ _____

12. $0.63 \div 0.9 =$ _____

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Name _____

Find Unknown Dimensions 13.4

Learning Target: Find unknown dimensions of rectangular prisms.

Success Criteria:

- I can find the height of a rectangular prism given the volume of the prism and the area of the base.
- I can find an unknown dimension of a rectangular prism given the volume of the prism and the other two dimensions.

FLORIDA STANDARDS
MAFS.5.MD.3.5a
MAFS.5.MD.3.5b

Explore and Grow

For each row of the table, use centimeter cubes to create the rectangular prism described. Then complete the table.



Volume (cubic centimeters)	Length (centimeters)	Width (centimeters)	Height (centimeters)
8	2	2	
15	5		1
24		2	4
36	4	3	

MP **Construct Arguments** Explain how you determined the unknown dimension for each rectangular prism.

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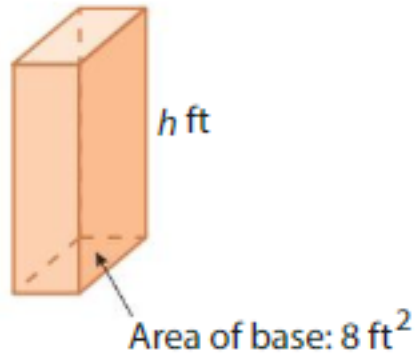
Think and Grow: Find Unknown Dimensions

Example The volume of the rectangular prism is 56 cubic feet. Find the height.



$V = B \times h$ Formula for volume of a rectangular prism

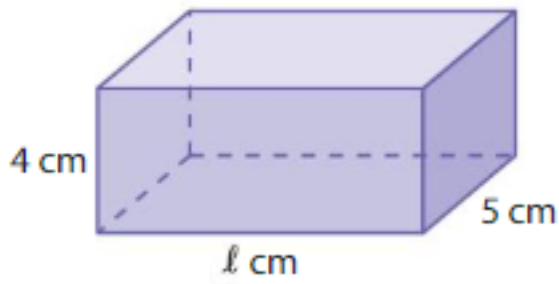
$56 = 8 \times h$ Write an equation.

$56 \div 8 = h$ Write the related division equation.

$\_\_\_\_ = h$ Divide 56 by 8.

The height is _____ feet.

Example The volume of the rectangular prism is 180 cubic centimeters. Find the length.



$V = \ell \times w \times h$ Formula for volume of a rectangular prism

$180 = \ell \times 5 \times 4$ Write an equation.

$180 = \ell \times (5 \times 4)$ Associative Property of Multiplication

$180 = \ell \times 20$ Multiply the width and the height.

$180 \div 20 = \ell$ Write the related division equation.

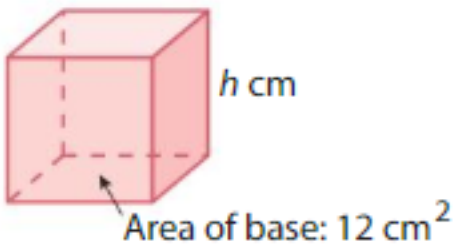
$\_\_\_\_ = \ell$ Divide 180 by 20.

The length is _____ centimeters.

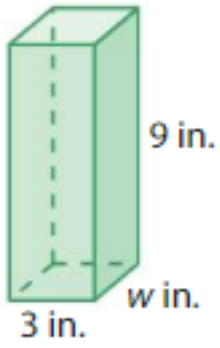
Show and Grow

Find the unknown dimension of the rectangular prism.

1. Volume = 48 cubic centimeters



2. Volume = 81 cubic inches



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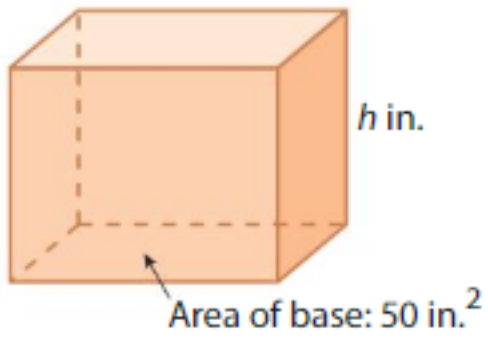
Name _____

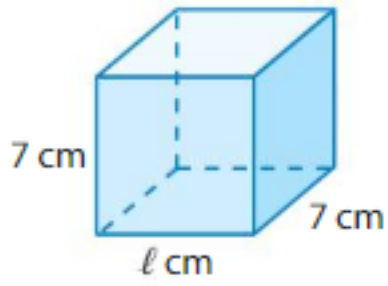
Apply and Grow: Practice

Find the unknown dimension of the rectangular prism.

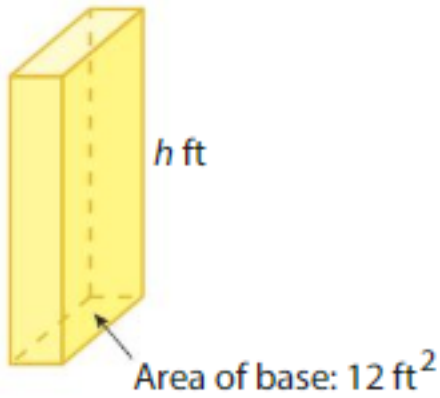
3. Volume = 400 cubic inches



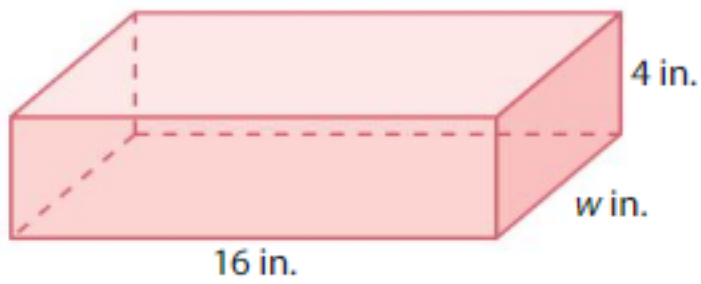
4. Volume = 343 cubic centimeters



5. Volume = 132 cubic feet



6. Volume = 512 cubic inches



7. **Writing** Explain how to find an unknown dimension of a rectangular prism given its volume and the other two dimensions.

8. **DIG DEEPER!** A rectangular prism has a volume of 720 cubic centimeters. The height of the prism is 10 centimeters. The length is twice the width. What are the dimensions of the base?

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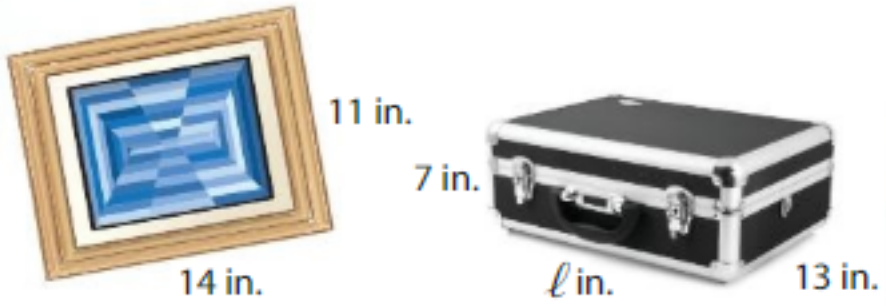
Think and Grow: Modeling Real Life

Example A traveler buys the painting shown. The volume of the suitcase is 1,820 cubic inches. Can the painting lie flat inside the suitcase?



Not drawn to scale

Use a formula to find the length of the suitcase.

$V = \ell \times w \times h$ Formula for volume of a rectangular prism

$1{,}820 = \ell \times 13 \times 7$ Write an equation.

$1{,}820 = \ell \times 91$ Multiply the width and the height.

$1{,}820 \div 91 = \ell$ Write the related division equation.

$\_\_\_\_ = \ell$ Divide 1,820 by 91.

Compare the lengths and the widths of the painting and the suitcase.

	Painting		Suitcase
Length:	14 in.	◯	____
Width:	11 in.	◯	13 in.

So, the painting _____ lie flat inside the suitcase.

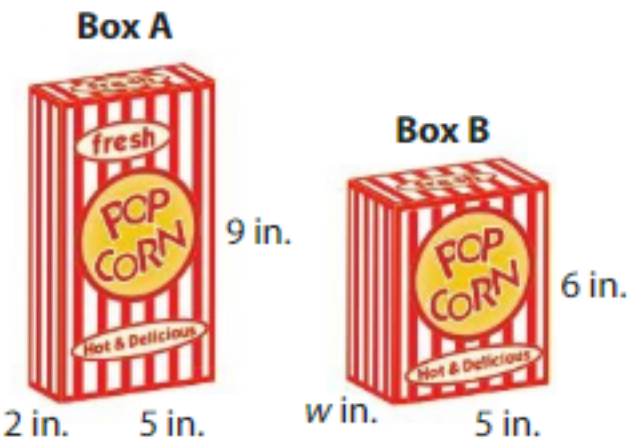
Show and Grow

9. The volume of the candle is 576 cubic centimeters. Will the candle fit completely inside the glass jar? Explain.



Not drawn to scale

10. **DIG DEEPER!** The popcorn boxes have the same volume, but different dimensions. What is the width of Box B?



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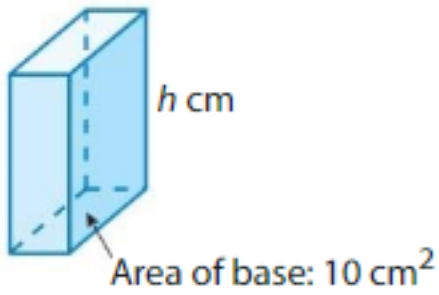
Name _____

Homework & Practice 13.4

Learning Target: Find unknown dimensions of rectangular prisms.

Example The volume of the rectangular prism is 60 cubic centimeters. Find the height.



$V = B \times h$

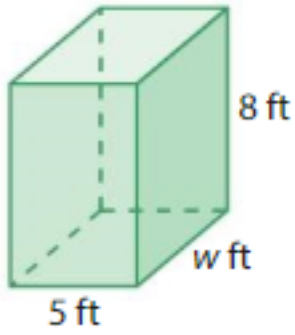
$60 = 10 \times h$

$60 \div 10 = h$

$\underline{6} = h$

The height is 6 centimeters.

Example The volume of the rectangular prism is 280 cubic feet. Find the width.



$V = \ell \times w \times h$

$280 = 5 \times w \times 8$

$280 = w \times (5 \times 8)$

$280 = w \times 40$

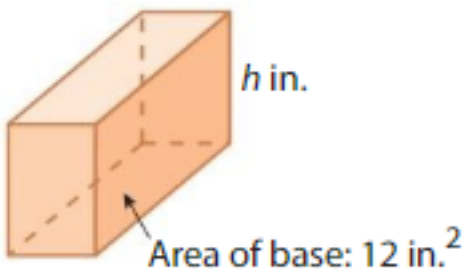
$280 \div 40 = w$

$\underline{7} = w$

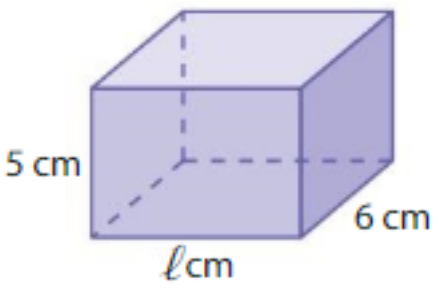
The width is 7 feet.

Find the unknown dimension of the rectangular prism.

1. Volume = 36 cubic inches



2. Volume = 210 cubic centimeters



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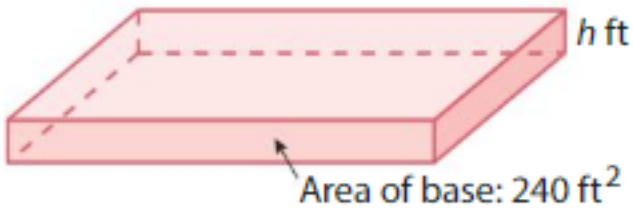
Find the unknown dimension of the rectangular prism.

3. Volume = 480 cubic feet

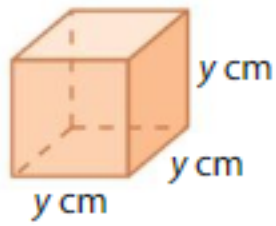


4. Volume = 351 cubic inches

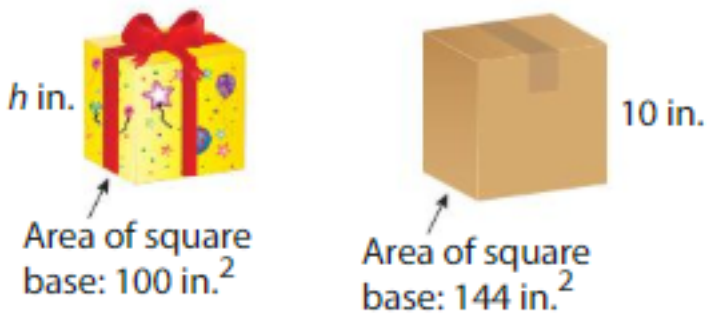


5. Open-Ended A rectangular prism has a volume of 144 cubic feet. The height of the prism is 6 feet. Give one possible pair of dimensions for the base.

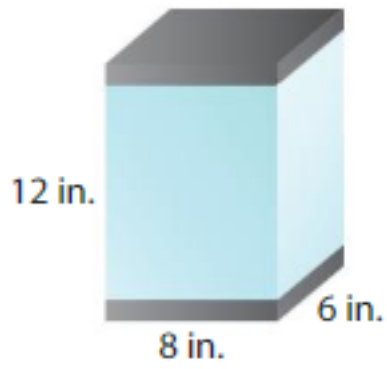
6. DIG DEEPER! The volume of the rectangular prism is 64 cubic centimeters. What is the value of y?



7. Modeling Real Life The volume of the gift is 900 cubic inches. Can the gift fit inside the shipping box? Explain.



8. DIG DEEPER! You fill the entire fish tank with water. Then you dump out some of the water. The volume of the water in the tank decreases by 96 cubic inches. How deep is the water now?



Review & Refresh

Divide.

9. $\frac{1}{3} \div 2 =$ _____

10. $\frac{1}{10} \div 6 =$ _____

11. $\frac{1}{8} \div 4 =$ _____

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Name _____

Find Volumes of Composite Figures

13.5

Learning Target: Find volumes of composite figures.

Success Criteria:

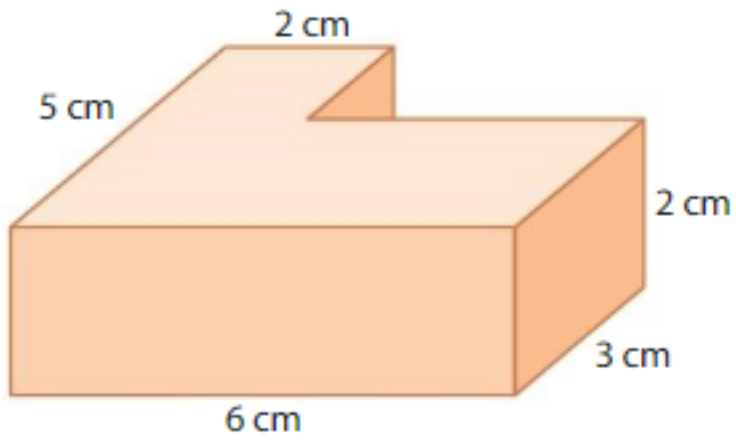
- I can break apart a composite figure into rectangular prisms.
- I can find an unknown dimension of a composite figure.
- I can add the volumes of rectangular prisms to find the volume of a composite figure.

FLORIDA STANDARDS

MAFS.5.MD.3.5b
MAFS.5.MD.3.5c

Explore and Grow

Use centimeter cubes to find the volume of the figure. Explain your method.



MP **Structure** Describe another way to find the volume of the figure.

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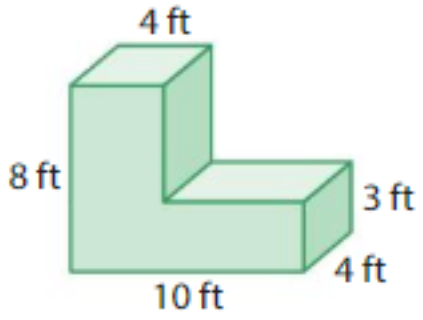
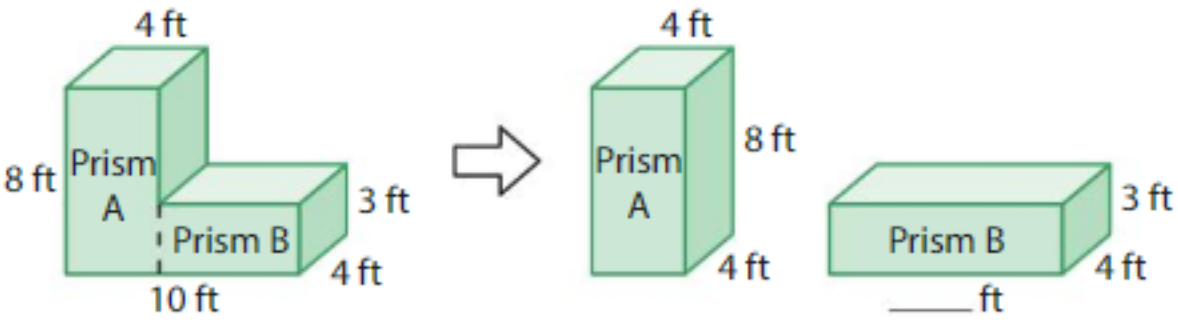
Think and Grow: Find the Volume of a Composite Figure

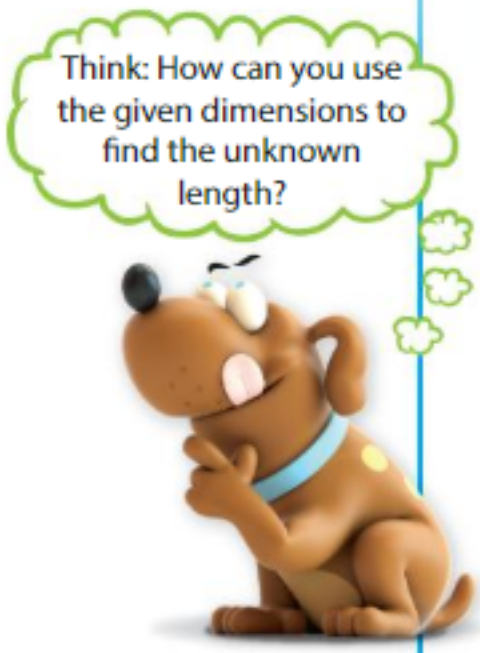
Key Idea A **composite figure** is made of two or more solid figures. You can break apart a composite figure to find its volume.



Example Find the volume of the composite figure.

Break apart the figure into rectangular prisms.
Find the dimensions of each prism.





Find the volume of each prism.

Prism A

$V = \ell \times w \times h$

$= \_\_\_\_ \times \_\_\_\_ \times \_\_\_\_$

$= \_\_\_\_$

Prism B

$V = \ell \times w \times h$

$= \_\_\_\_ \times \_\_\_\_ \times \_\_\_\_$

$= \_\_\_\_$

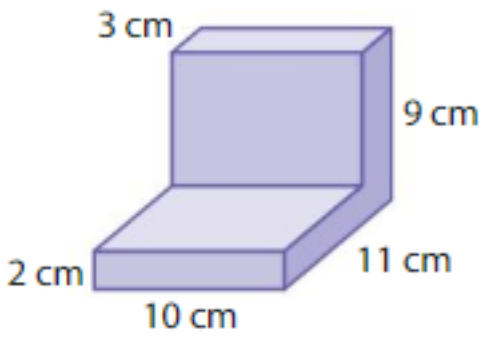
Add the volumes of the prisms to find the total volume.

$\_\_\_\_ + \_\_\_\_ = \_\_\_\_$

So, the volume of the composite figure is _____ cubic feet.

Show and Grow

1. Find the volume of the composite figure.



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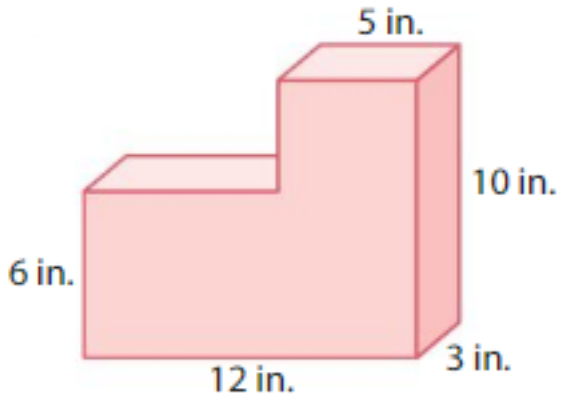
Name _____

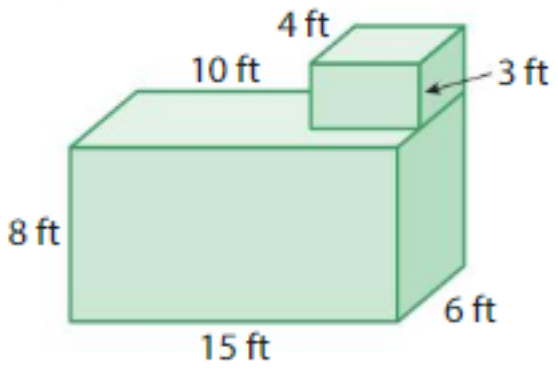
Apply and Grow: Practice

Find the volume of the composite figure.

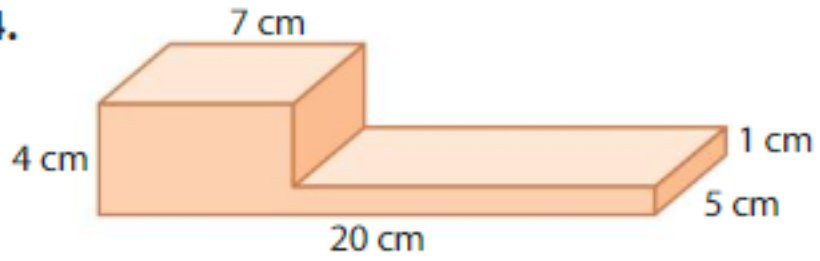
2.



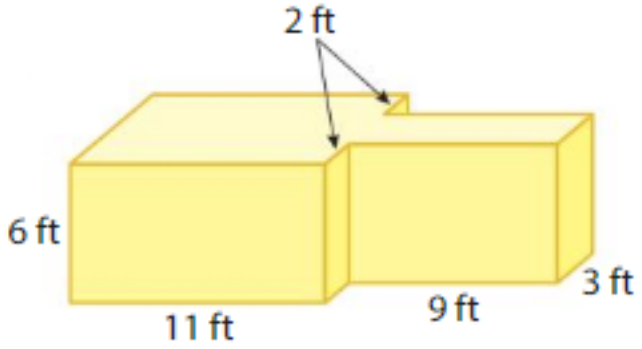
3.



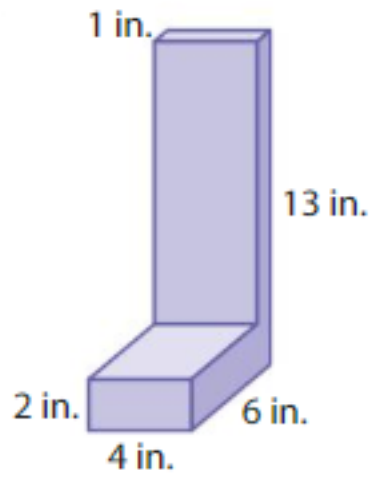
4.



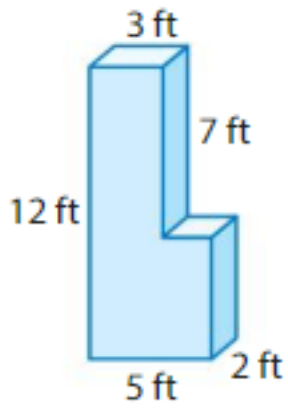
5.



6. **Number Sense** Write one possible equation for the volume of the composite figure.



7. **YOU BE THE TEACHER** Your friend finds the volume of the composite figure. Is your friend correct? Explain.



$12 \times 2 \times 3 = 72$

$5 \times 2 \times 5 = 50$

$72 + 50 = 122$ cubic feet

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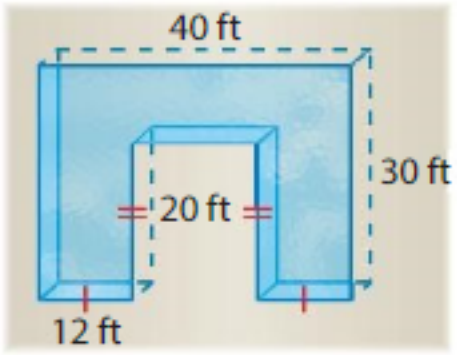
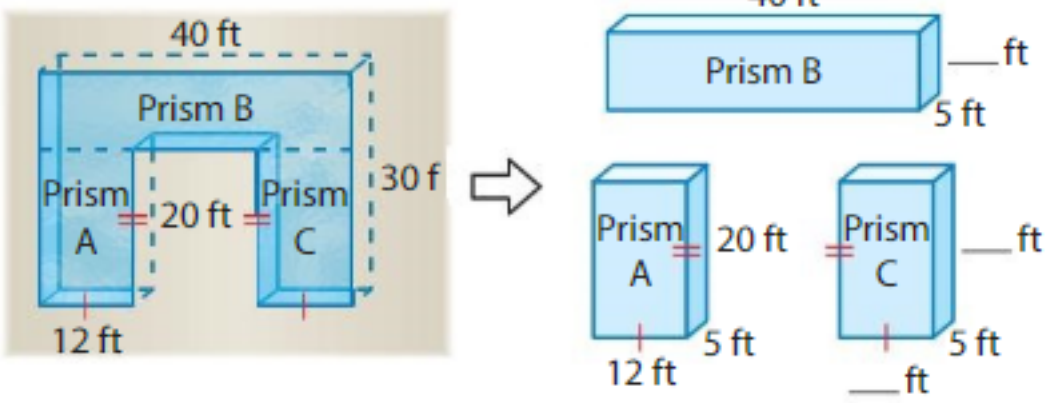
Think and Grow: Modeling Real Life

Example The depth of the swimming pool is 5 feet. How many cubic feet of water can the pool hold?



Break apart the pool into rectangular prisms.
Find the dimensions of each prism.



Remember, red tick marks mean the edges of the figure have the same length.



Find the volume of each prism.

Prism A

$V = \ell \times w \times h$

$= 12 \times 5 \times 20$

$=$ _____

Prism B

$V = \ell \times w \times h$

$= 40 \times 5 \times$ _____

$=$ _____

Prism C

$V = \ell \times w \times h$

$=$ _____ $\times 5 \times$ _____

$=$ _____

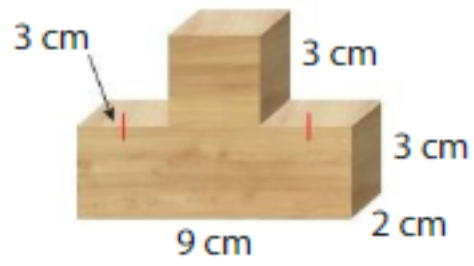
Add the volumes of the prisms to find the total volume.

_____ + _____ + _____ = _____

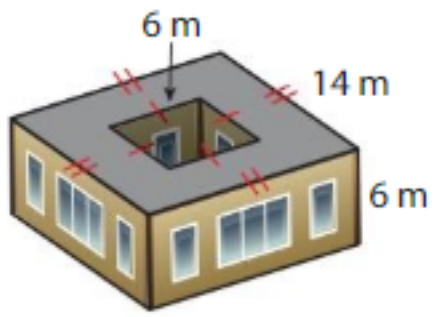
So, the pool can hold _____ cubic feet of water.

Show and Grow

8. How many cubic centimeters of wood are needed to make the game piece?



9. DIG DEEPER! What is the volume of the building surrounding the outdoor courtyard? Explain your method.



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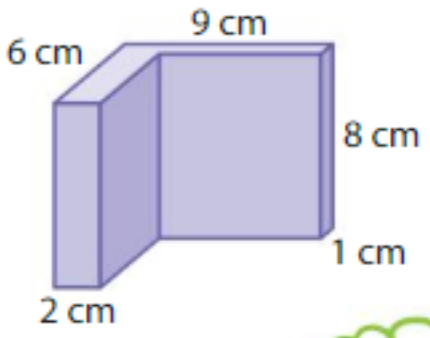
Name _____

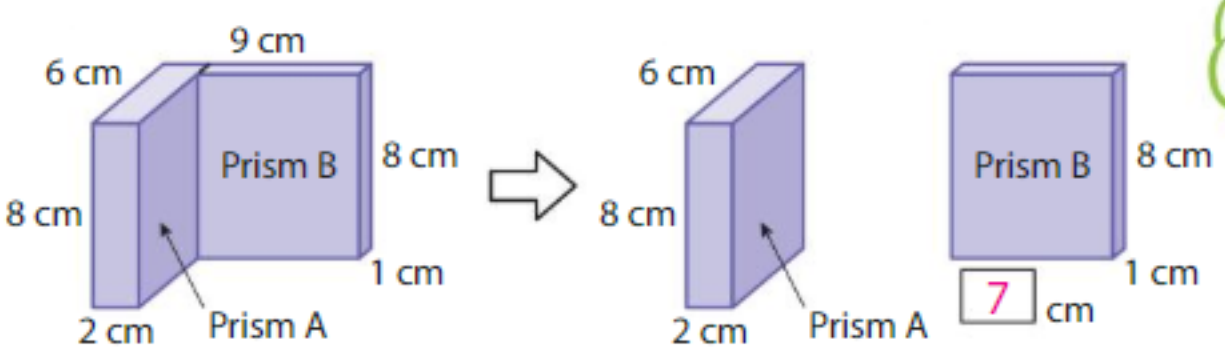
Homework & Practice 13.5

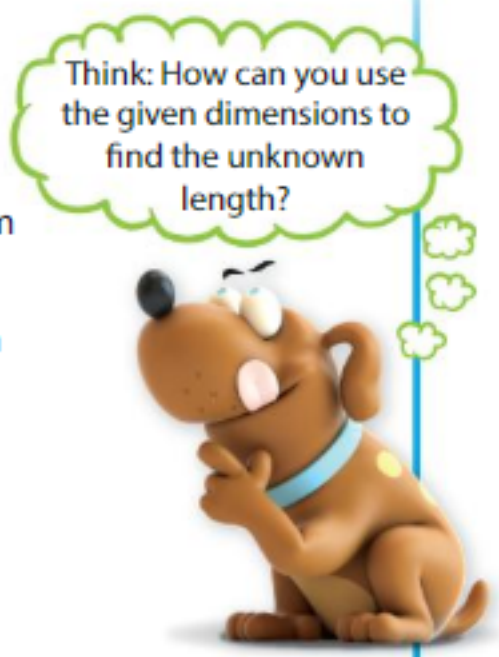
Learning Target: Find volumes of composite figures.

Example Find the volume of the composite figure.



Break apart the figure into rectangular prisms. Find the dimensions of each prism.





Find the volume of each prism.

Prism A

$V = \ell \times w \times h$

$= \underline{2} \times \underline{6} \times \underline{8}$

$= \underline{96}$

Prism B

$V = \ell \times w \times h$

$= \underline{7} \times \underline{1} \times \underline{8}$

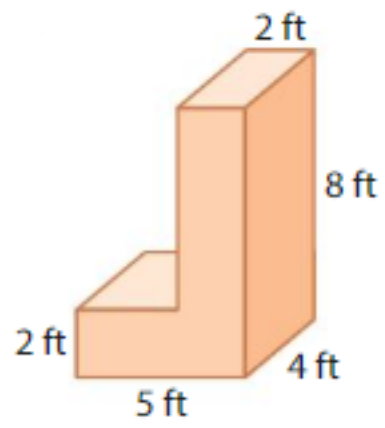
$= \underline{56}$

Add the volumes of the prisms to find the total volume.

$\underline{96} + \underline{56} = \underline{152}$

So, the volume of the composite figure is 152 cubic centimeters.

1. Find the volume of the composite figure.



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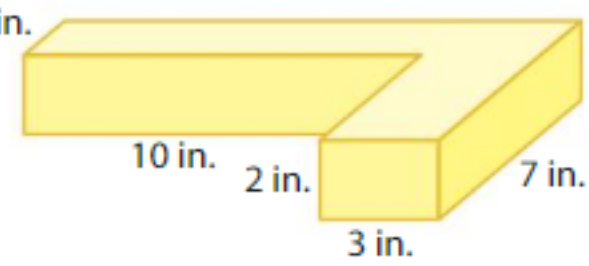
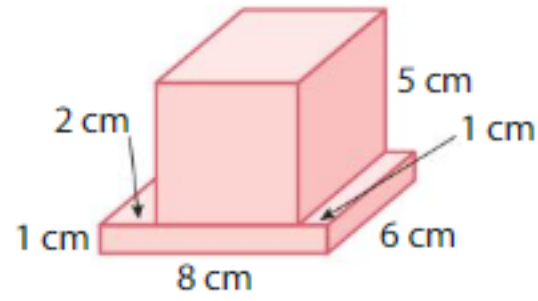
Find the volume of the composite figure.

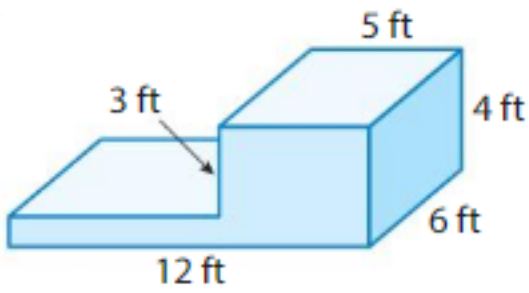
2.



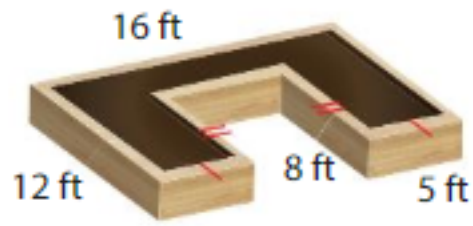
3.



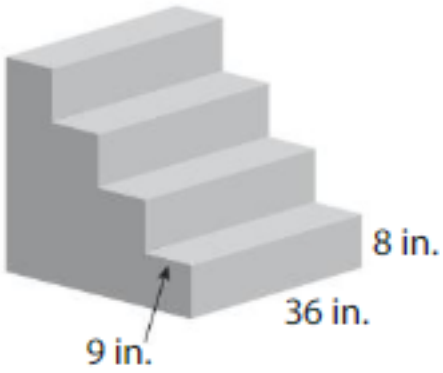
4. **Structure** Find the volume of the composite figure two different ways.



5. **Modeling Real Life** The height of the garden bed is 2 feet. How many cubic feet of soil are in the garden bed?



6. **DIG DEEPER!** The dimensions of each step are the same. How many cubic inches of concrete does a worker need to make the staircase?



Review & Refresh

Multiply.

7. $\frac{4}{5} \times 5 =$ _____

8. $\frac{1}{2} \times 6 =$ _____

9. $\frac{7}{8} \times 3 =$ _____

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Name _____

Performance Task 13

Mechanical engineers follow guidelines when designing and installing elevators to make sure passengers are safe and the elevators are wheelchair accessible. Many elevators have heating and air conditioning units attached to them, so it is important to know the volume inside the elevator to keep the air a comfortable temperature.



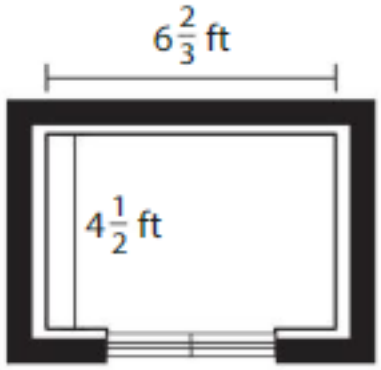
Maximum Capacity:
2,500 pounds

1. The inside of the elevator shown is in the shape of a rectangular prism.

a. What is the volume of the inside of the elevator?

b. Another elevator has the same height and width. The length of the inside is doubled. How does this affect the volume?

c. Five people ride with their luggage on the elevator. Each person weighs about 200 pounds. The total combined weight of their luggage is about 425 pounds. About how many more pounds can the elevator hold?



Minimum requirements for a wheelchair accessible elevator.

2. The inside of all new elevators must be wheelchair accessible. The minimum requirements are shown. The inside volume of an older elevator is 144 cubic feet. The base is a square and the height is 9 feet.

a. Explain why the older elevator does *not* meet the wheelchair requirements.

b. A new wheelchair-accessible elevator is added to the building. Its height is 9 feet. Find the minimum volume of the new elevator. How does this compare to the volume of the old elevator?

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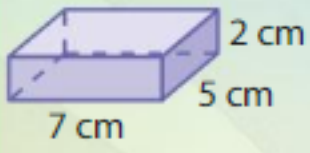
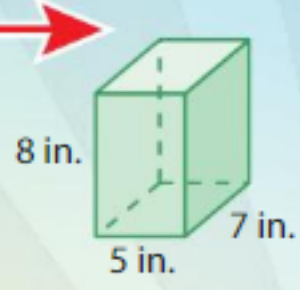
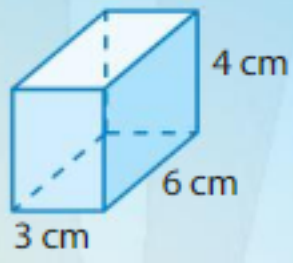
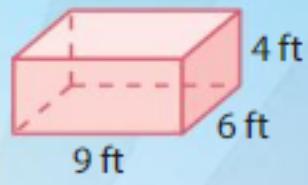
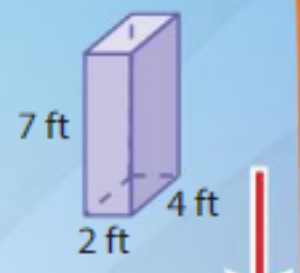
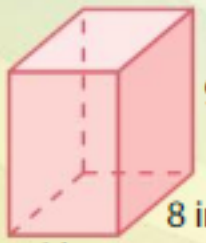
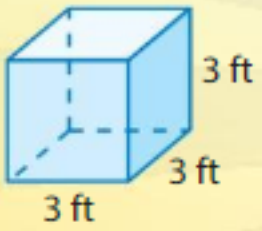
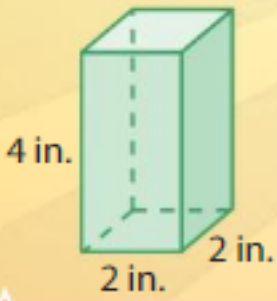
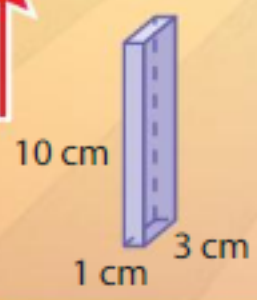
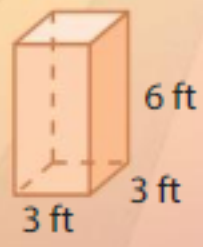
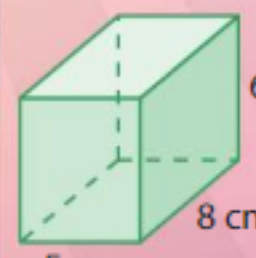
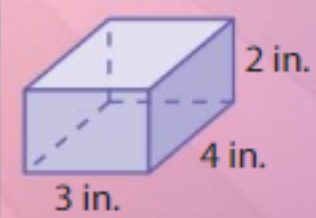
Volume Solve and Connect

Directions:

1. Players take turns rolling a die.
2. On your turn, move your piece the number of spaces shown on the die.
3. Find the volume of the rectangular prism.
4. Cover the volume with a counter. Your turn is over.
5. The first player to get three in a row, horizontally, vertically, or diagonally, wins!

START 				
	54 cubic feet	72 cubic centimeters	24 cubic inches	36 cubic feet
	280 cubic inches	162 cubic centimeters	27 cubic feet	30 cubic centimeters
	70 cubic centimeters	16 cubic inches	56 cubic feet	15 cubic centimeters
				

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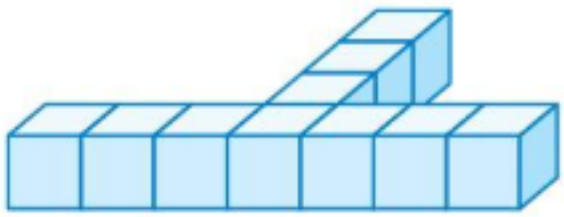
Name _____

Chapter Practice 13

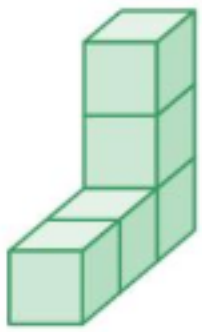
13.1 Understand the Concept of Volume

Find the volume of the figure.

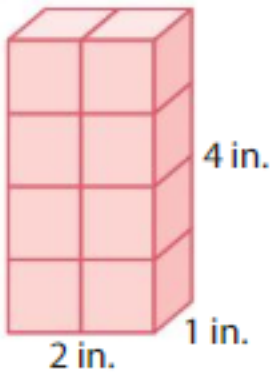
1. Volume = _____



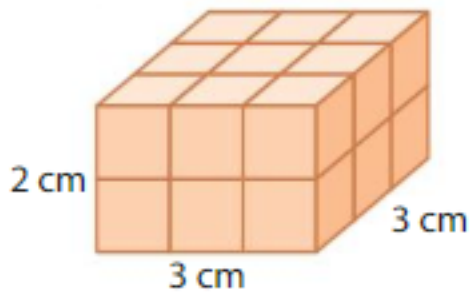
2. Volume = _____



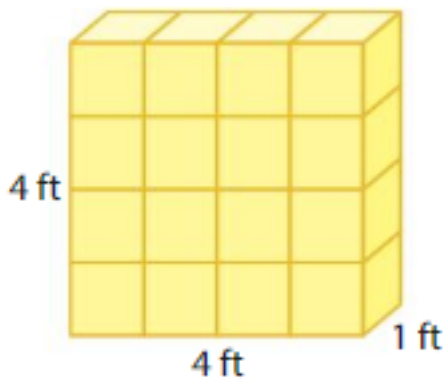
3. Volume = _____



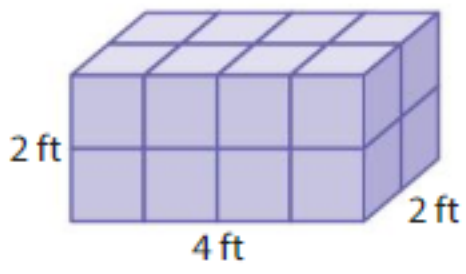
4. Volume = _____



5. Volume = _____



6. Volume = _____



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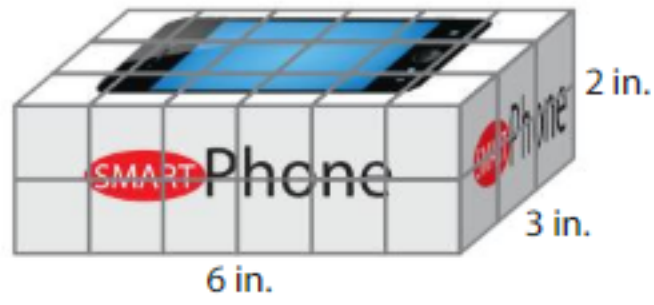
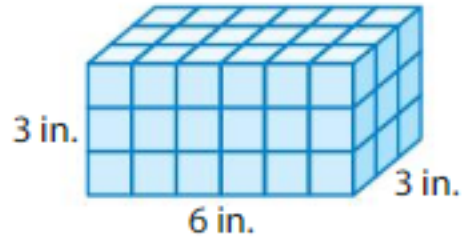
7. Modeling Real Life A container holds 30 of the phone boxes shown, without any gaps or overlaps. What is the volume of the container?



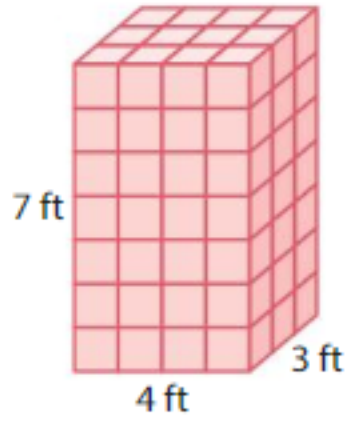
13.2 Find Volumes of Right Rectangular Prisms

Find the volume of the rectangular prism.

8. Volume = _____



9. Volume = _____



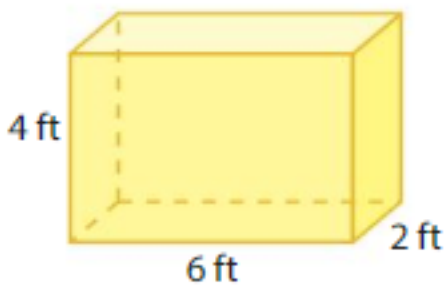
10. A rectangular prism is made of unit cubes, like the one shown. The prism is 9 centimeters long, 3 centimeters wide, and 5 centimeters tall. What is the volume of the prism?



13.3 Apply the Volume Formula

Find the volume of the rectangular prism.

11.



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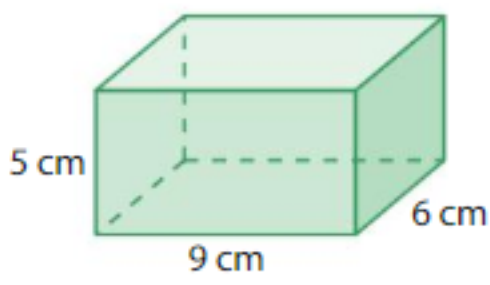

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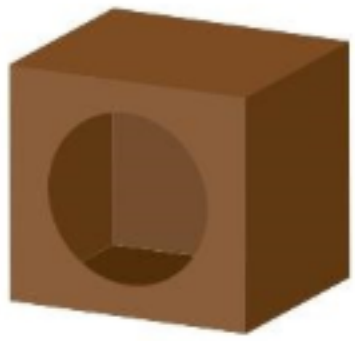
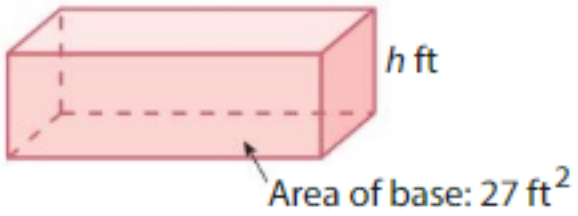
13. Descartes's cat cave is a rectangular prism. The cave is 14 inches long, 13 inches wide, and 12 inches tall. What is the volume of the cave?



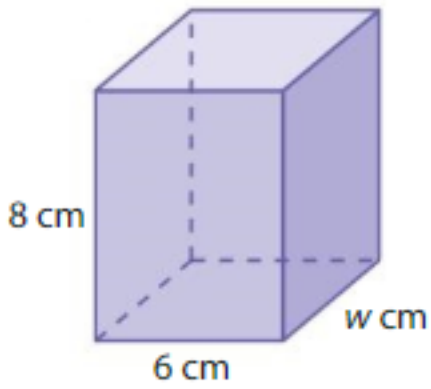
13.4 Find Unknown Dimensions

Find the unknown dimension of the rectangular prism.

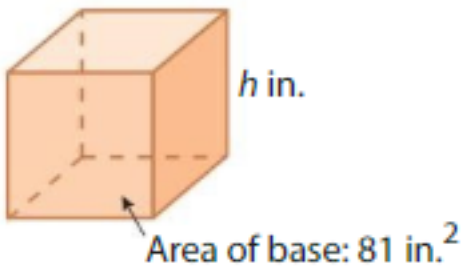
14. Volume = 81 cubic feet



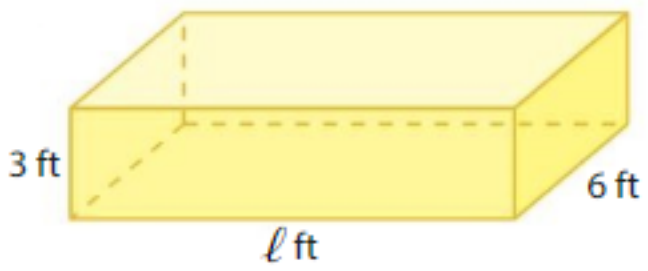
15. Volume = 288 cubic centimeters



16. Volume = 729 cubic inches



17. Volume = 216 cubic feet



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18. **Open-Ended** A rectangular prism has a volume of 128 cubic feet. The height of the prism is 8 feet. Give one possible set of dimensions for the base.

---

19. **Modeling Real Life** You buy the drawing pad shown. The volume of the drawer is 800 cubic inches. Can the drawing pad lie flat inside the drawer?

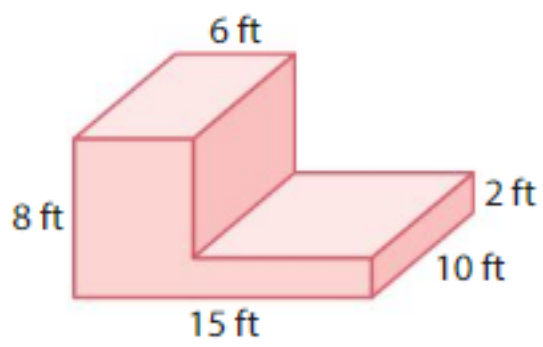


Not drawn to scale

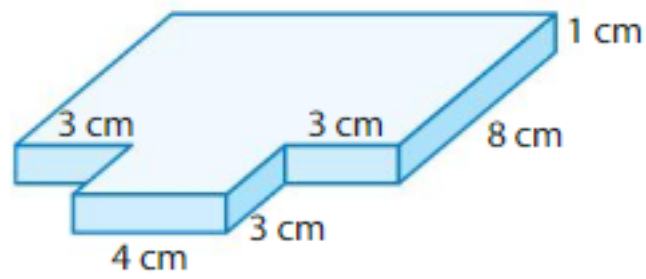
13.5 Find Volumes of Composite Figures

Find the volume of the composite figure.

20.



21.



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14

Classify Two-Dimensional Shapes

Chapter Learning Target:
Understand two-dimensional shapes.

Chapter Success Criteria:

- I can define two-dimensional shapes.
- I can explain different shapes and their features.
- I can compare shapes.
- I can draw shapes.

- Solar panels absorb energy from the Sun to generate electricity. Where are some places you might see solar panels?
- Why is it important to know the shape and dimensions of before installing solar panels?



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Name _____

14 Vocabulary

Review Words

acute angle
obtuse angle
right angle
straight angle

Organize It

Use the review words to complete the graphic organizer.

Angles

_____

- An angle that is open less than a right angle
- An angle that measures less than 90°

_____

- An L-shaped angle
- An angle that measures 90°

_____

- An angle that is open more than a right angle and less than a straight angle
- An angle that measures between 90° and 180°

_____

- An angle that forms a straight line
- An angle that measures 180°

Define It

Use your vocabulary cards to match.

1. rectangle — A quadrilateral that has exactly one pair of parallel sides
2. rhombus — A parallelogram that has four sides with the same length
3. trapezoid — A parallelogram that has four right angles

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Chapter 14 Vocabulary Cards

acute triangle

equiangular triangle

equilateral triangle

isosceles triangle

obtuse triangle

parallelogram

rectangle

rhombus

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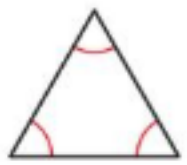
A triangle that has three angles with the same measure



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A triangle that has three acute angles



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A triangle that has two sides with the same length



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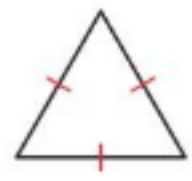
A triangle that has three sides with the same length



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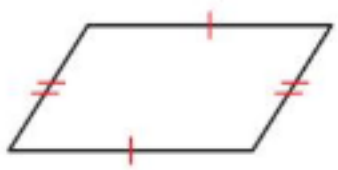
A quadrilateral that has two pairs of parallel sides



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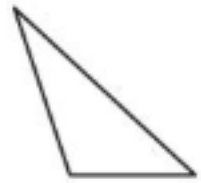
A triangle that has one obtuse angle



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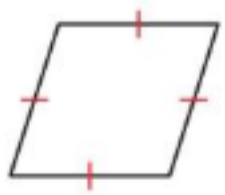
A parallelogram that has four sides with the same length



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A parallelogram that has four right angles



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right triangle

scalene triangle

square

trapezoid

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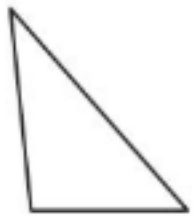
A triangle that has no sides with the same length



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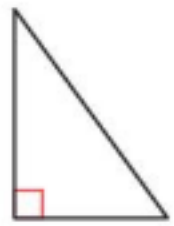
A triangle that has one right angle



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A quadrilateral that has exactly one pair of parallel sides



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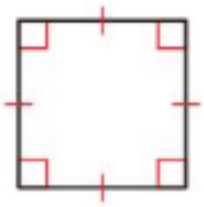
A parallelogram that has four right angles and four sides with the same length



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Name _____

Classify Triangles 14.1

Learning Target: Classify triangles by their angles and their sides.

Success Criteria:

- I can identify an angle of a triangle as right, acute, or obtuse.
- I can determine whether sides of a triangle have the same length.
- I can use angles and sides to classify a triangle.

FLORIDA STANDARDS
MAFS.5.G.2.4

Explore and Grow

Draw and label a triangle for each description. If a triangle *cannot* be drawn, explain why.

triangle with three acute angles	triangle with two obtuse angles
triangle with two sides that have the same length	triangle with no sides that have the same length

MP **Precision** Draw a triangle that meets two of the descriptions above.

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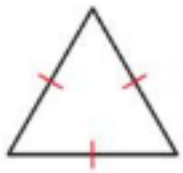
Think and Grow: Classify Triangles

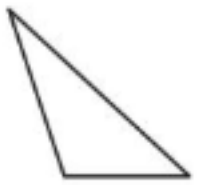
Key Idea Triangles can be classified by their sides.



An **equilateral triangle** has three sides with the same length.



An **isosceles triangle** has two sides with the same length.



A **scalene triangle** has no sides with the same length.

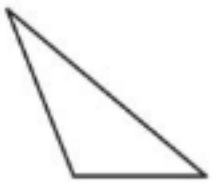
Remember, red tick marks indicate sides with the same length, and red arcs indicate angles with the same measure.



Key Idea Triangles can be classified by their angles.



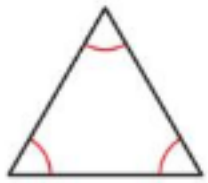
An **acute triangle** has three acute angles.



An **obtuse triangle** has one obtuse angle.

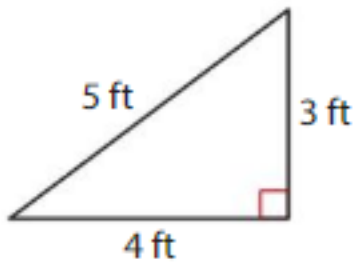


A **right triangle** has one right angle.



An **equiangular triangle** has three angles with the same measure.

Example Classify the triangle by its angles and its sides.



The triangle has one _____ angle

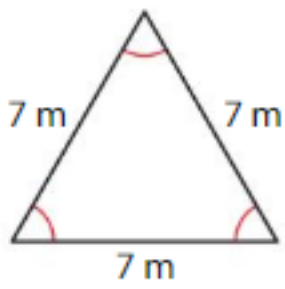
and _____ sides with the same length.

So, it is a _____ _____ triangle.

Show and Grow

Classify the triangle by its angles and its sides.

1.



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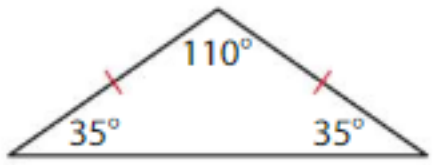

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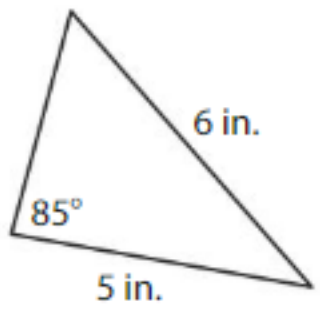

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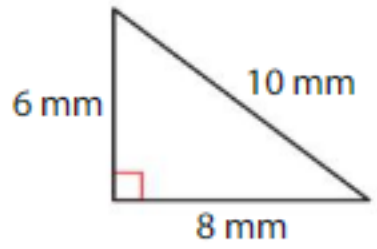
Name _____

Apply and Grow: Practice

Classify the triangle by its angles and its sides.

4.



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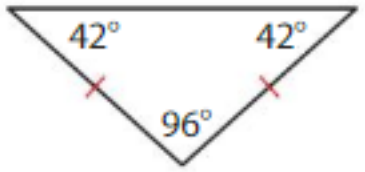

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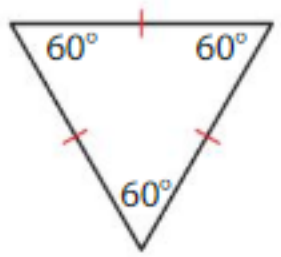

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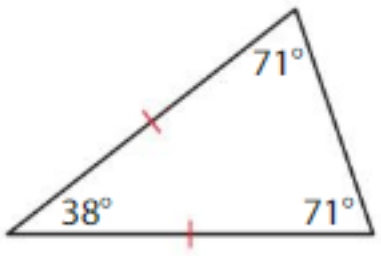

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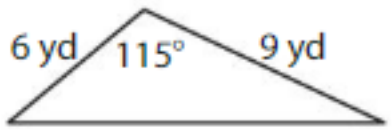

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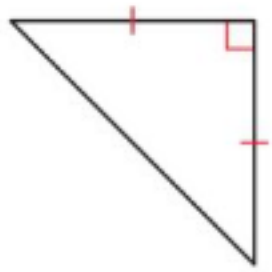
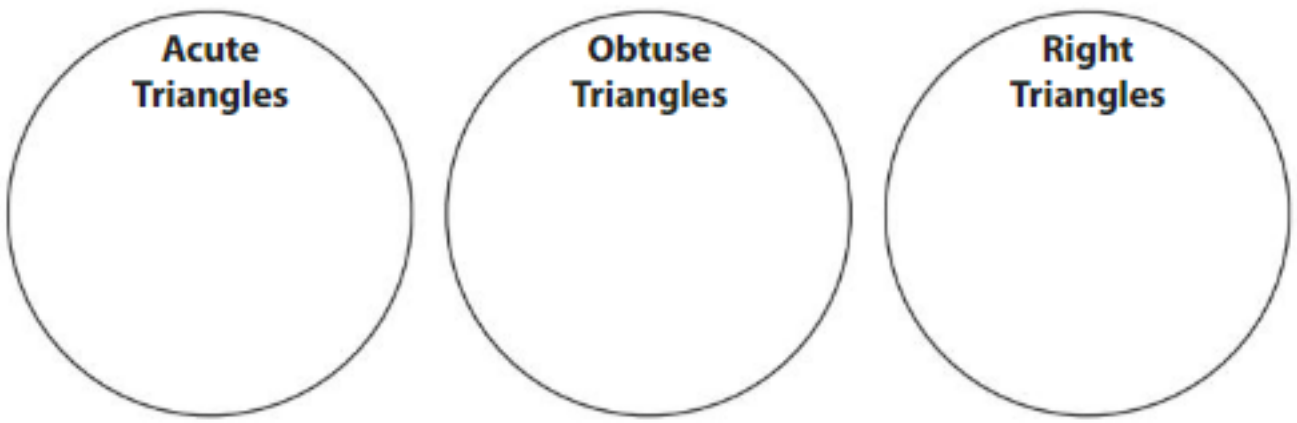


10. A triangular sign has a 40° angle, a 55° angle, and an 85° angle. None of its sides have the same length. Classify the triangle by its angles and its sides.

11. **YOU BE THE TEACHER** Your friend says the triangle is an acute triangle because it has two acute angles. Is your friend correct? Explain.



12. **DIG DEEPER!** Draw one triangle for each category. Which is the appropriate category for an equiangular triangle? Explain your reasoning.



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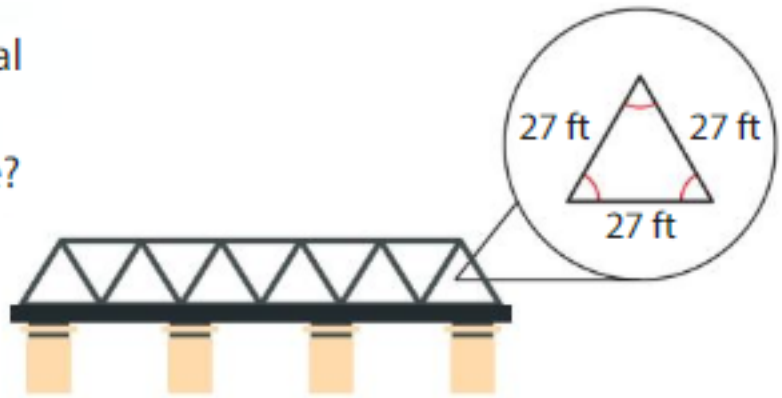
Think and Grow: Modeling Real Life

Example A bridge contains several identical triangles. Classify each triangle by its angles and its sides. What is the length of the bridge?



Each triangle has _____ angles with the same measure and _____ sides with the same length.

So, each triangle is _____ and _____.

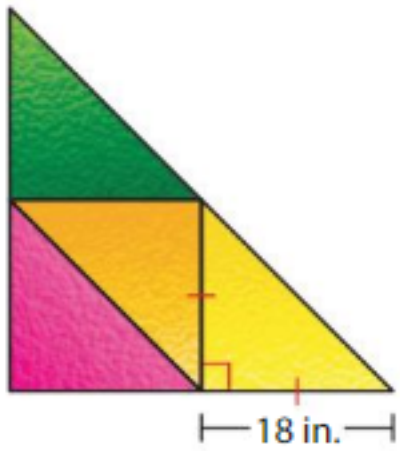
The side lengths of 6 identical triangles meet to form the length of the bridge. So, multiply the side length by 6 to find the length of the bridge.

$27 \times 6 =$ _____

So, the bridge is _____ long.

Show and Grow

13. The window is made using identical triangular panes of glass. Classify each triangle by its angles and its sides. What is the height of the window?





14. **DIG DEEPER!** You connect four triangular pieces of fabric to make the kite. Classify the triangles by their angles and their sides. Use a ruler and a protractor to verify your answer.

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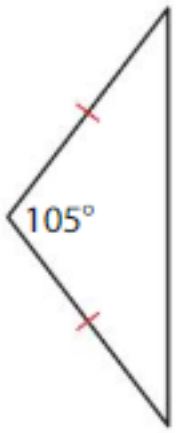
Name _____

Homework & Practice 14.1

Learning Target: Classify triangles by their angles and their sides.

Example Classify the triangle by its angles and its sides.



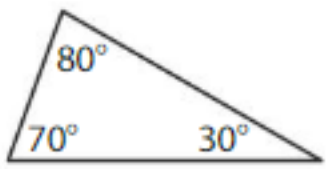
The triangle has one obtuse angle

and 2 sides with the same length.

So, it is an obtuse isosceles triangle.

Classify the triangle by its angles and its sides.

1.



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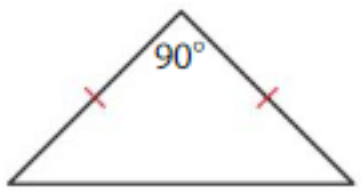

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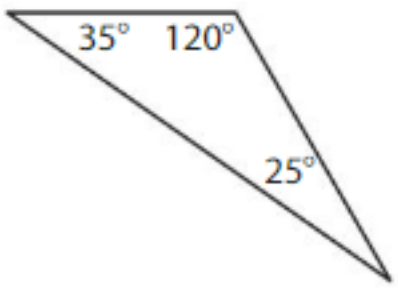

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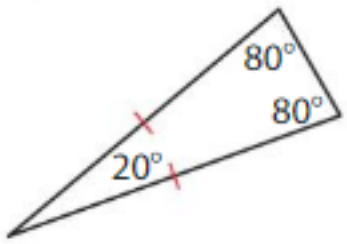

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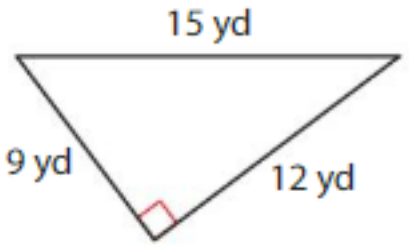
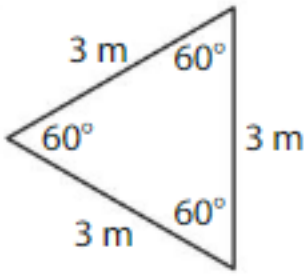


6.



7. A triangular race flag has two 65° angles and a 50° angle. Two of its sides have the same length. Classify the triangle by its angles and its sides.

8. A triangular measuring tool has a 90° angle and no sides of the same length. Classify the triangle by its angles and its sides.

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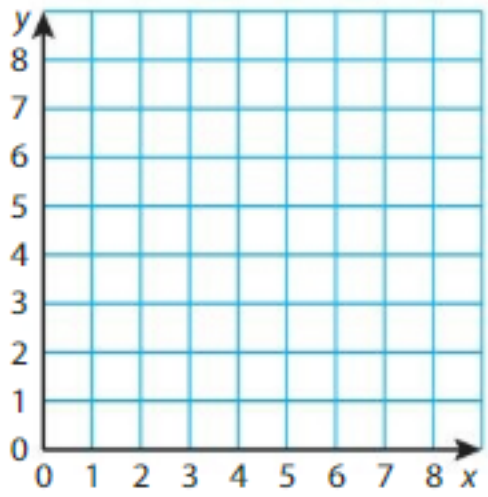
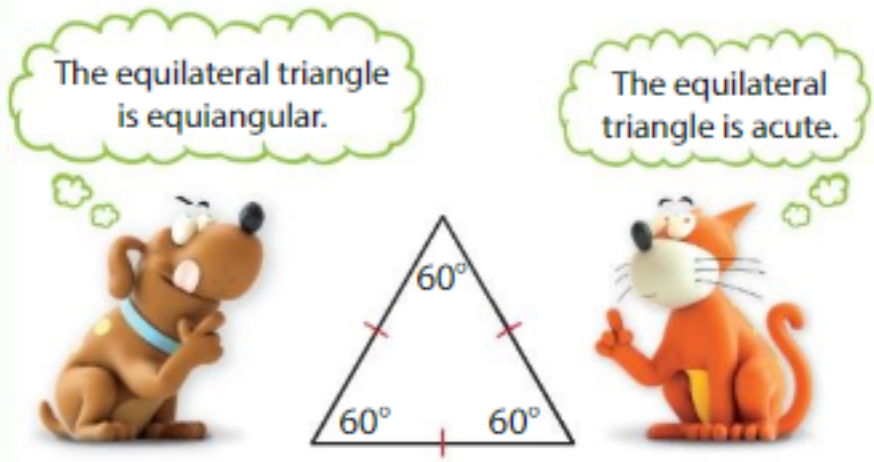
9. **Structure** Draw a triangle with vertices $A(2, 2)$, $B(2, 6)$, and $C(6, 2)$ in the coordinate plane. Classify the triangle by its angles and its sides. Explain your reasoning.



10. **YOU BE THE TEACHER** Your friend says that both Newton and Descartes are correct. Is your friend correct? Explain.

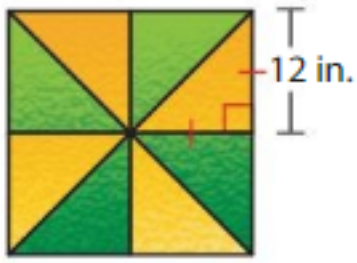


11. **DIG DEEPER!** The sum of all the angle measures in a triangle is 180°. A triangle has a 34° angle and a 26° angle. Is the triangle acute, right, or obtuse? Explain.

12. **Modeling Real Life** A designer creates the logo using identical triangles. Classify each triangle by its angles and its sides. What is the perimeter of the logo?



13. **DIG DEEPER!** The window is made using identical triangular panes of glass. Classify each triangle by its angles and its sides. What are the perimeter and the area of the window? Explain your reasoning.



Review & Refresh

Multiply.

14. $\frac{1}{8} \times 2 =$ _____

15. $\frac{3}{4} \times 5 =$ _____

16. $3 \times \frac{5}{12} =$ _____

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Name _____

Classify Quadrilaterals 14.2

Learning Target: Classify quadrilaterals by their angles and their sides.

Success Criteria:

- I can identify parallel sides and sides with the same length in a quadrilateral.
- I can identify right angles in a quadrilateral.
- I can use angles and sides to classify a quadrilateral.

FLORIDA STANDARDS

MAFS.5.G.2.3
MAFS.5.G.2.4

Explore and Grow

Draw and label a quadrilateral for each description. If a quadrilateral cannot be drawn, explain why.

quadrilateral with exactly one pair of parallel sides	quadrilateral with two pairs of parallel sides
quadrilateral with four right angles	quadrilateral with four sides that have the same length

MP **Precision** Draw a quadrilateral that meets three of the descriptions above.

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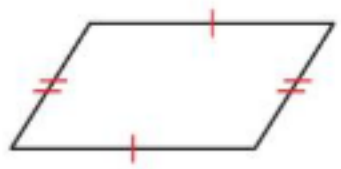
Think and Grow: Classify Quadrilaterals

Key Idea Quadrilaterals can be classified by their angles and their sides.

A **trapezoid** is a quadrilateral that has exactly one pair of parallel sides.



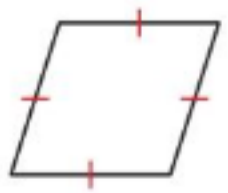
A **parallelogram** is a quadrilateral that has two pairs of parallel sides. Opposite sides have the same length.



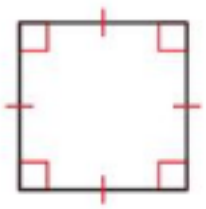
A **rectangle** is a parallelogram that has four right angles.



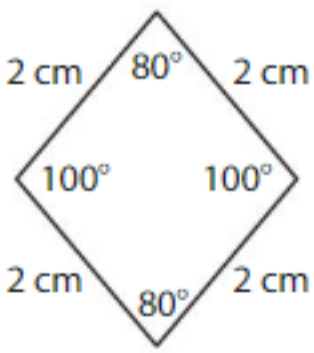
A **rhombus** is a parallelogram that has four sides with the same length.



A **square** is a parallelogram that has four right angles and four sides with the same length.



Example Classify the quadrilateral in as many ways as possible.



The quadrilateral has _____ right angles,

_____ pairs of parallel sides, and

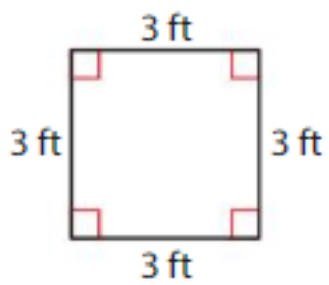
_____ sides with the same length.

So, it is a _____ and a _____.

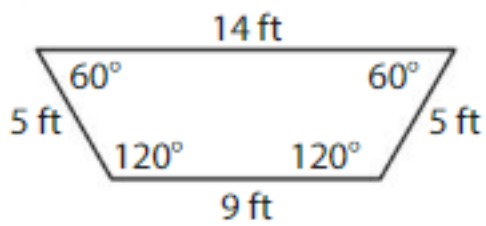
Show and Grow

Classify the quadrilateral in as many ways as possible.

1.



2.



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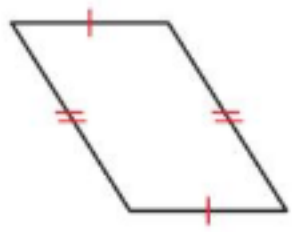
Name _____

Apply and Grow: Practice

Classify the quadrilateral in as many ways as possible.

3.



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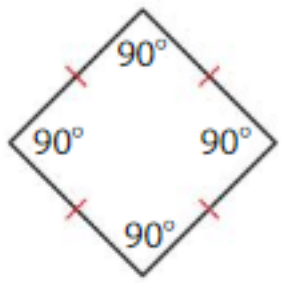

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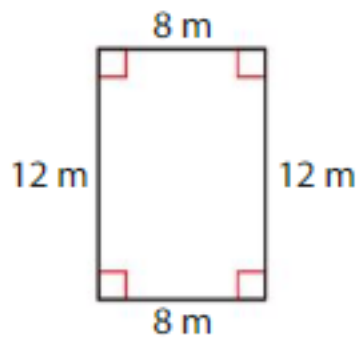

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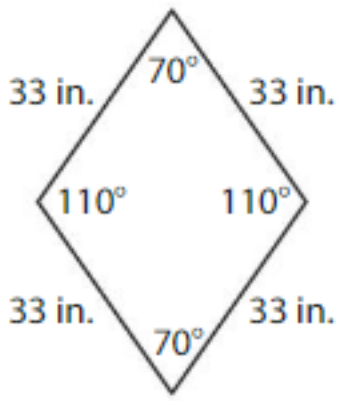

7. A sign has the shape of a quadrilateral that has two pairs of parallel sides, four sides with the same length, and no right angles.

8. A tabletop has the shape of a quadrilateral with exactly one pair of parallel sides.

9. **YOU BE THE TEACHER** Your friend says that a quadrilateral with at least two right angles must be a parallelogram. Is your friend correct? Explain.

10. **Which One Doesn't Belong?** Which set of lengths *cannot* be the side lengths of a parallelogram?

4 m, 2 m, 4 m, 2 m

5 in., 5 in., 5 in., 5 in.

7 ft, 8 ft, 8 ft, 7 ft

9 yd, 5 yd, 5 yd, 3 yd

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Think and Grow: Modeling Real Life

Example The dashed line shows how you cut the bottom of a rectangular door so it opens more easily. Classify the new shape of the door.



Draw the new shape of the door.



The original shape of the door was a rectangle,

so it had _____ pairs of parallel sides.

The new shape of the door has

exactly _____ pair of parallel sides.

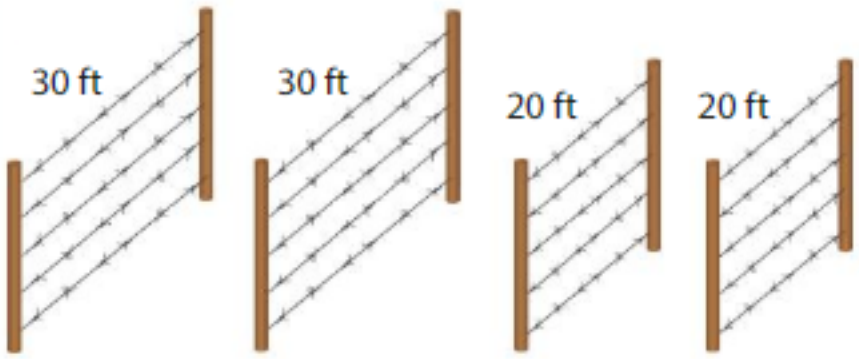
So, the new shape of the door is a _____.

Show and Grow

11. The dashed line shows how you cut the corner of the trapezoidal piece of fabric. The line you cut is parallel to the opposite side. Classify the new shape of the four-sided piece of fabric.



12. **DIG DEEPER!** A farmer encloses a section of land using the four pieces of fencing. Name all of the four-sided shapes that the farmer can enclose with the fencing.



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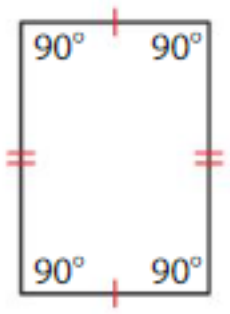
Name _____

Homework & Practice 14.2

Learning Target: Classify quadrilaterals by their angles and their sides.

Example Classify the quadrilateral in as many ways as possible.



The quadrilateral has 4 right angles,

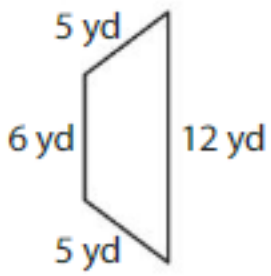
2 pairs of parallel sides, and

opposite sides with the same length.

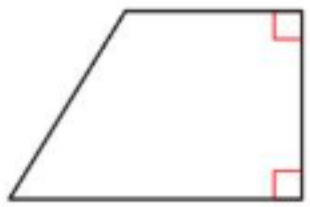
So, it is a parallelogram and a rectangle.

Classify the quadrilateral in as many ways as possible.

1.



2.



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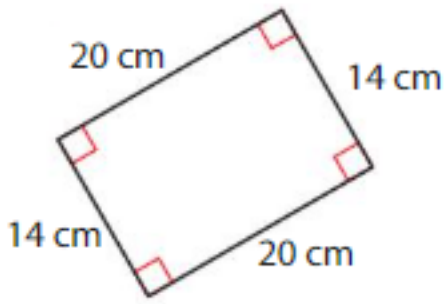
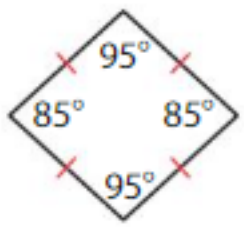


4.



5. A name tag has the shape of a quadrilateral that has two pairs of parallel sides and four right angles. Opposite sides are the same length, but not all four sides are the same length.

6. A napkin has the shape of a quadrilateral that has two pairs of parallel sides, four sides with the same length, and four right angles.

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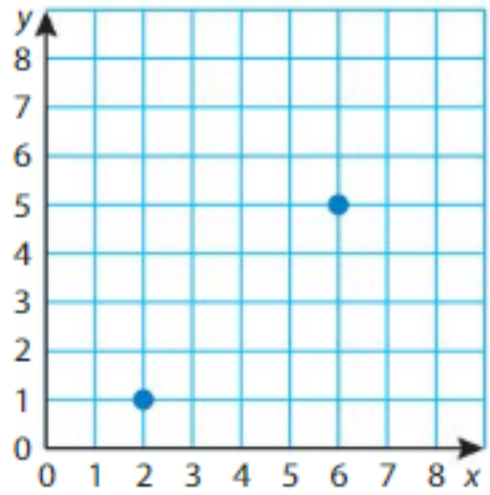
7. **Reasoning** Can you draw a quadrilateral that is *not* a square, but has four right angles? Explain.

8. **Structure** Plot two more points in the coordinate plane to form a square. What two points can you plot to form a parallelogram? What two points can you plot to form a trapezoid? Do not use the same pair of points twice.

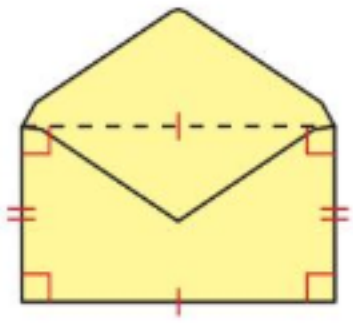


Parallelogram: _____

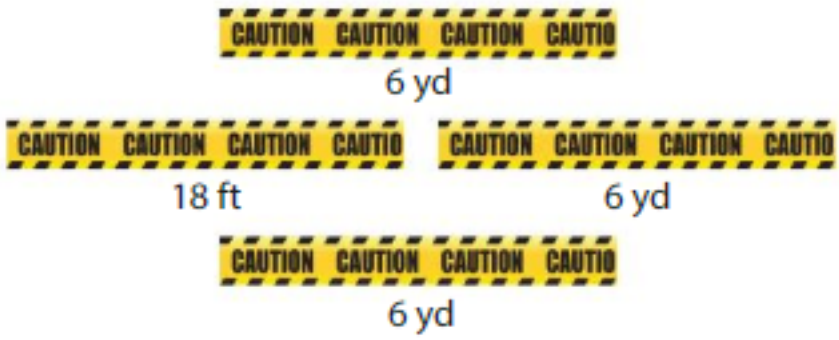
Trapezoid: _____

9. **DIG DEEPER!** Which quadrilateral can be classified as a parallelogram, rectangle, square, *and* rhombus? Explain.

10. **Modeling Real Life** The dashed line shows how you fold the flap of the envelope so it closes. Classify the new shape of the envelope.



11. **DIG DEEPER!** A construction worker tapes off a section of land using the four pieces of caution tape. Name all of the possible shapes that the worker can enclose with the tape.



Review & Refresh

Subtract.

12. $\frac{2}{3} - \frac{1}{6} =$ _____

13. $\frac{1}{2} - \frac{7}{18} =$ _____

14. $\frac{2}{5} - \frac{1}{9} =$ _____

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Name _____

Relate Quadrilaterals 14.3

Learning Target: Understand the hierarchy of quadrilaterals.

Success Criteria:

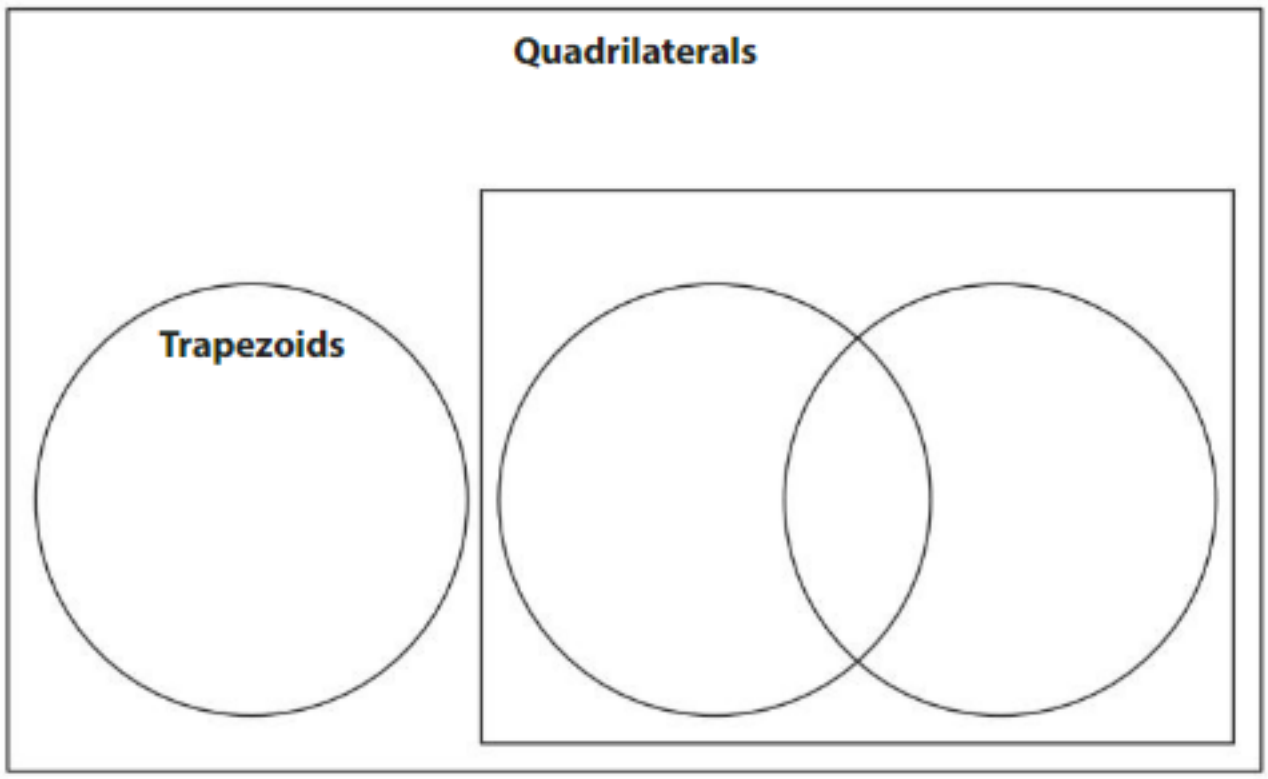
- I can arrange quadrilaterals in a Venn diagram based on their properties.
- I can use a Venn diagram to make statements about the relationships among quadrilaterals.

FLORIDA STANDARDS
MAFS.5.G.2.3
MAFS.5.G.2.4

Explore and Grow

Label the Venn diagram to show the relationships among quadrilaterals. The first one has been done for you.

Quadrilaterals
- trapezoids
- parallelograms
- rectangles
- rhombuses
- squares



MP **Reasoning** Explain how you decided where to place each quadrilateral.

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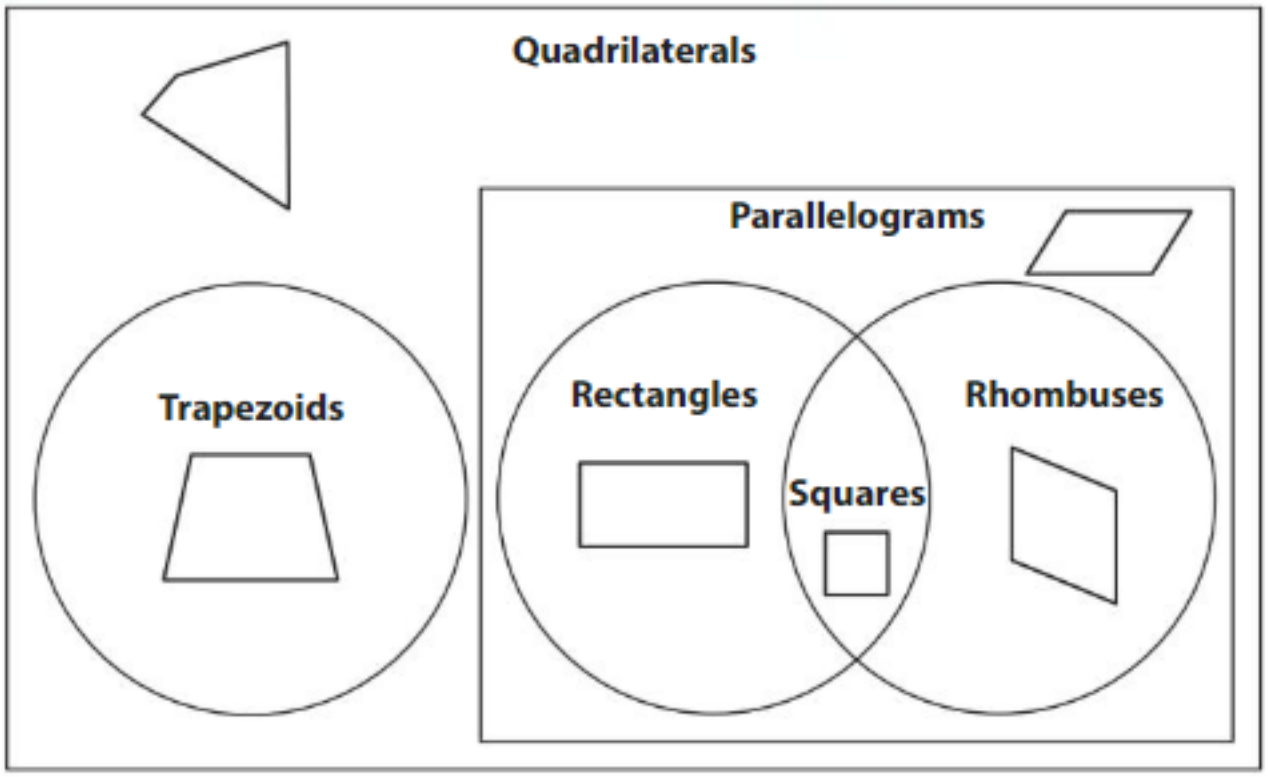
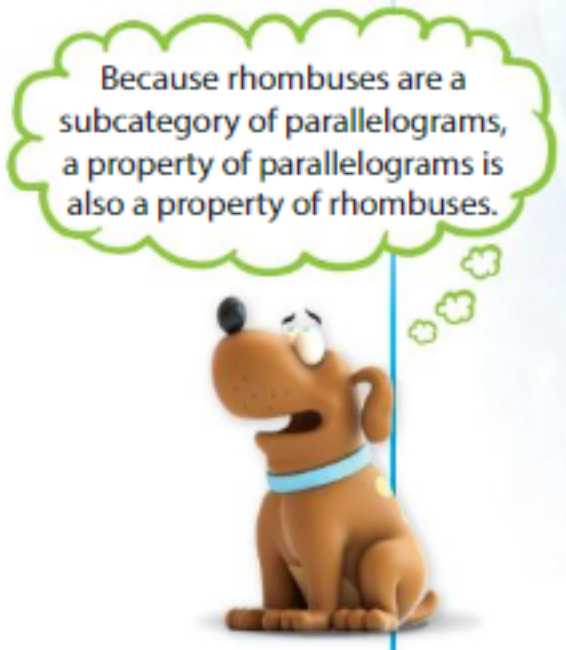
Think and Grow: Relate Quadrilaterals

Key Idea The Venn diagram shows the relationships among quadrilaterals.





Example Tell whether the statement is *true* or *false*.

All rhombuses are rectangles.

Rhombuses do not always have four right angles.

So, the statement is _____.

Example Tell whether the statement is *true* or *false*.

All rectangles are parallelograms.

All rectangles have two pairs of parallel sides.

So, the statement is _____.

Show and Grow

Tell whether the statement is *true* or *false*. Explain.

1. Some rhombuses are squares.

2. All parallelograms are rectangles.

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Name _____

Apply and Grow: Practice

Tell whether the statement is *true* or *false*. Explain.

3. All rectangles are squares.

4. Some parallelograms are trapezoids.

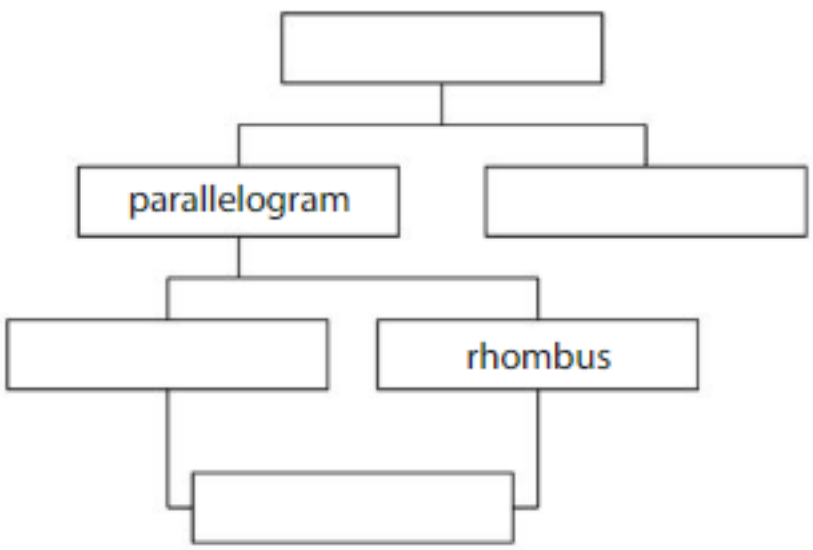
5. Some rhombuses are rectangles.

6. All trapezoids are quadrilaterals.

7. All squares are rhombuses.

8. Some trapezoids are squares.

9. MP **Reasoning** Use the word cards to complete the graphic organizer.



square | quadrilateral

rectangle | trapezoid

10. MP **Reasoning** All rectangles are parallelograms. Are all parallelograms rectangles? Explain.

11. MP **Precision** Newton says the figure is a square. Descartes says the figure is a parallelogram. Your friend says the figure is a rhombus. Are all three correct? Explain.



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Think and Grow: Modeling Real Life

Example You use toothpicks to create several parallelograms. You notice that opposite angles of parallelograms have the same measure. For what other quadrilaterals is this also true?



Parallelograms have the property that opposite angles have the same measure. Subcategories of parallelograms must also have this property.

_____, _____, and _____ are subcategories of parallelograms.

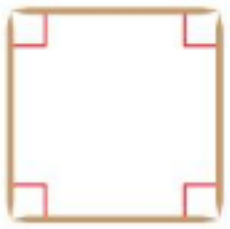
Rectangle



Rhombus



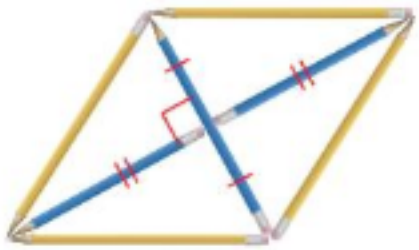
Square



So, _____, _____, and _____ also have opposite angles with the same measure.

Show and Grow

12. You use pencils to create several rhombuses. You notice that diagonals of rhombuses are perpendicular and divide each other into two equal parts. For what other quadrilateral is this also true? Explain your reasoning.



A *diagonal* is a line segment that connects opposite vertices of a quadrilateral.



13. **DIG DEEPER!** You place two identical parallelograms side by side. What can you conclude about the measures of adjacent angles in a parallelogram? For what other quadrilaterals is this also true? Explain your reasoning.



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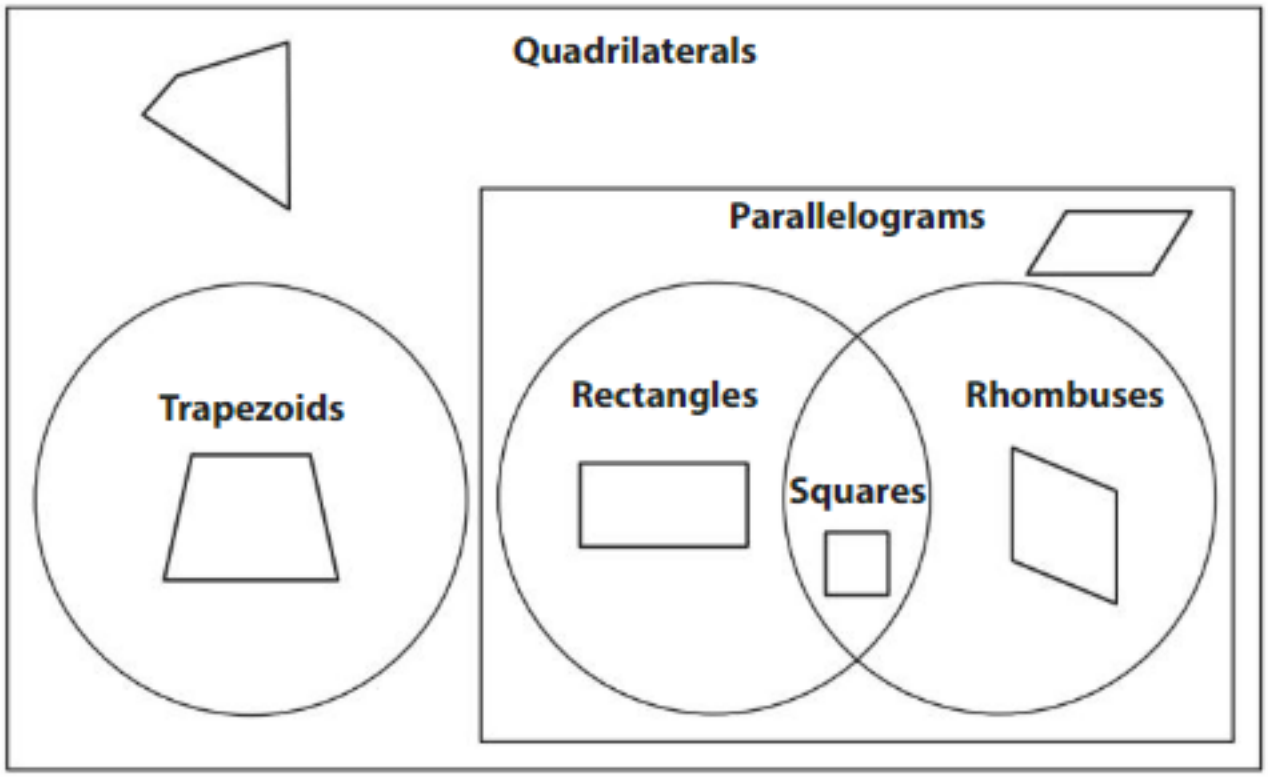
Name _____

Homework & Practice 14.3

Learning Target: Understand the hierarchy of quadrilaterals.



Example Tell whether the statement is *true* or *false*.

All squares are rectangles.

All squares are parallelograms with four right angles.

So, the statement is true .

Tell whether the statement is *true* or *false*. Explain.

1. All trapezoids are parallelograms.

2. All rectangles are parallelograms.

3. All squares are quadrilaterals.

4. Some quadrilaterals are trapezoids.

5. Some parallelograms are rectangles.

6. All squares are rectangles and rhombuses.

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7. **YOU BE THE TEACHER** Newton says he can draw a quadrilateral that is *not* a trapezoid and *not* a parallelogram. Is Newton correct? Explain.

8. **Writing** Explain why a parallelogram is *not* a trapezoid.

Reasoning Write *always*, *sometimes*, or *never* to make the statement true.

9. A rhombus is _____ a square.

10. A trapezoid is _____ a rectangle.

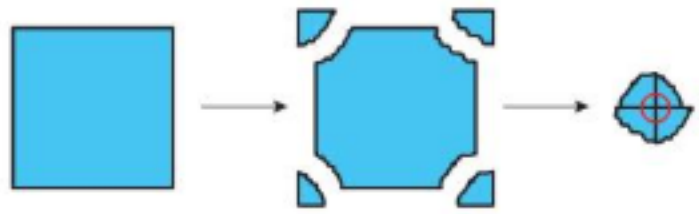
11. A parallelogram is _____ a quadrilateral.

12. **DIG DEEPER!** A quadrilateral has exactly three sides that have the same length. Why can the figure *not* be a rectangle?

13. **Modeling Real Life** You fold the rectangular piece of paper. You notice that the line segments connecting the halfway points of opposite sides are perpendicular. For what other quadrilateral is this also true?



14. **DIG DEEPER!** You tear off the four corners of the square and arrange them to form a circle. You notice that the sum of the angle measures of a square is equal to 360°. For what other quadrilaterals is this also true?



Review & Refresh

Convert the capacity.

15. 5 pt = _____ c

16. 32 fl oz = _____ c

17. 20 qt = _____ c

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Name _____

Performance Task 14

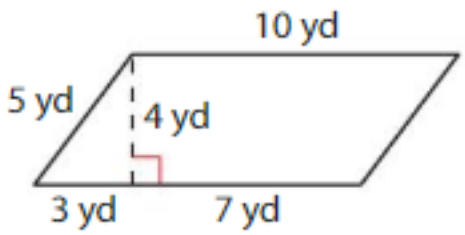
A homeowner wants to install solar panels on her roof to generate electricity for her house. A solar panel is 65 inches long and 39 inches wide.

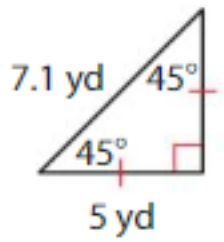


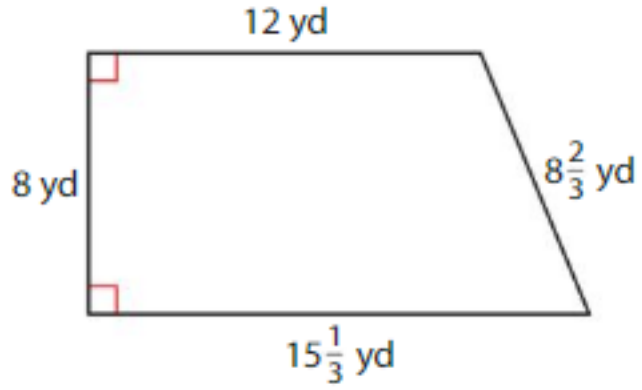
1. a. The shape of the panel has 4 right angles. Sketch and classify the shape of the solar panel.

b. There are 60 identical solar cells in a solar panel, arranged in an array. Ten cells meet to form the length of the panel, and six cells meet to form the width. Classify the shape of each solar cell. Explain your reasoning.

2. The homeowner measures three sections of her roof.







a. Classify the shape of each section in as many ways as possible.

b. About how many solar panels can fit on the measured sections of the roof? Explain your reasoning.

3. One solar panel can produce about 30 kilowatt-hours of electricity each month. The homeowner uses her electric bills to determine that she uses about 1,200 kilowatt-hours of electricity each month.

a. How many solar panels should the homeowner install on her roof?

b. Will all of the solar panels fit on the measured sections of the roof? Explain.

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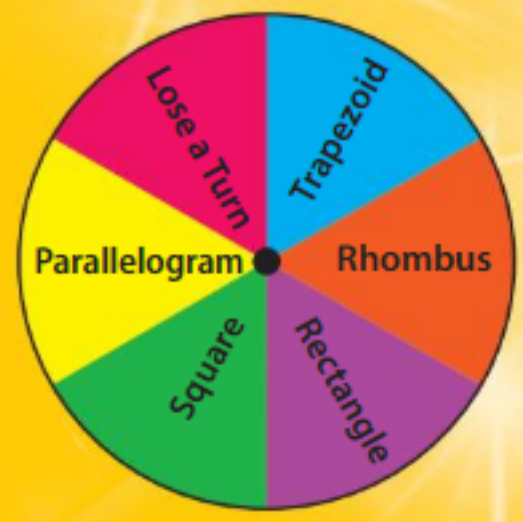
Quadrilateral Lineup

Directions:

1. Players take turns spinning the spinner.
2. On your turn, cover a quadrilateral that matches your spin.
3. If you land on *Lose a Turn*, then do not cover a quadrilateral.
4. The first player to get four in a row twice, horizontally, vertically, or diagonally, wins!



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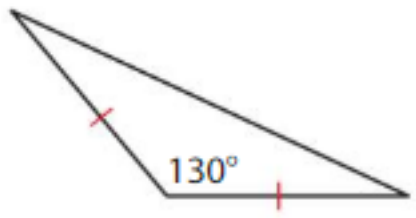
Chapter Practice 14

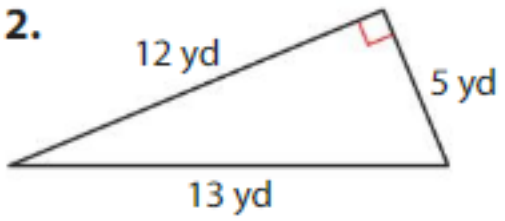
14.1 Classify Triangles

Classify the triangle by its angles and its sides.

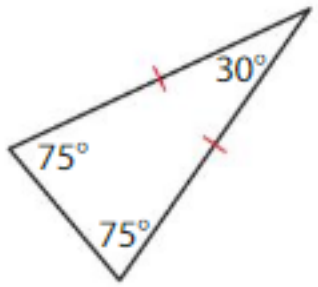
1.



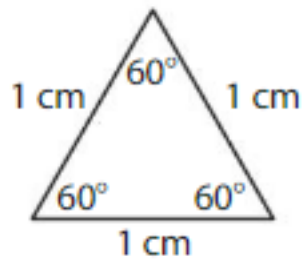
2.



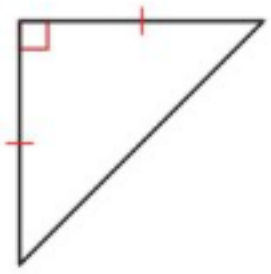
3.



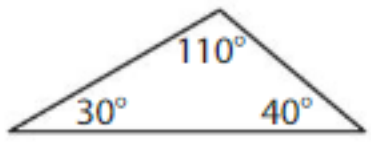
4.



5.



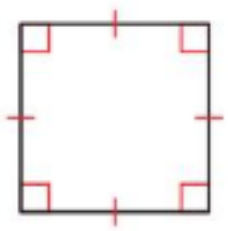
6.



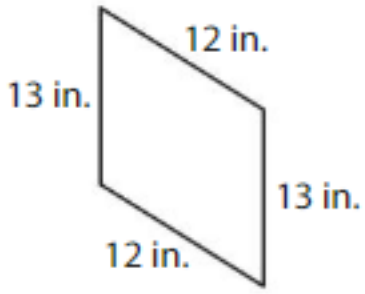
14.2 Classify Quadrilaterals

Classify the quadrilateral in as many ways as possible.

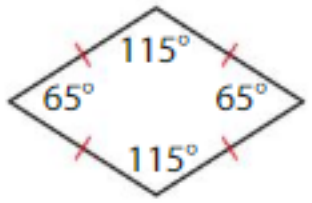
7.



8.



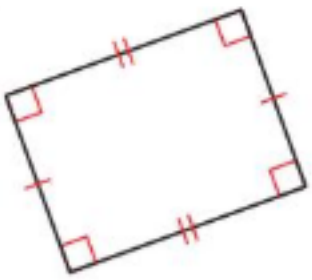
9.



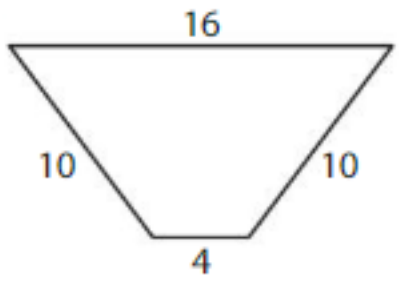
10.



11.



12.



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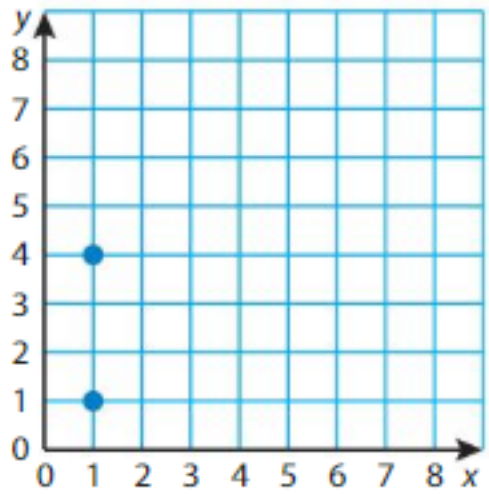
13. **Structure** Plot two more points in the coordinate plane to form a rectangle. What two points can you plot to form a trapezoid? What two points can you plot to form a rhombus? Do not use the same pair of points twice.

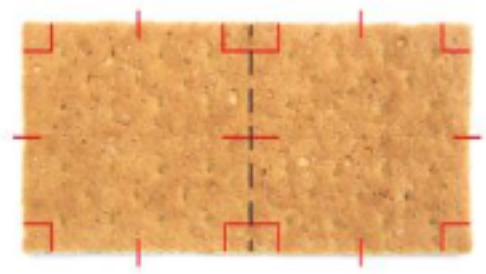


Trapezoid: _____

Rhombus: _____

14. **Reasoning** Can you draw a quadrilateral that has exactly two right angles? Explain.

15. **Modeling Real Life** The dashed line shows how you break apart the graham cracker. Classify the new shape of each piece of the graham cracker.



14.3 Relate Quadrilaterals

Tell whether the statement is *true* or *false*. Explain.

16. All rectangles are quadrilaterals.

17. Some parallelograms are squares.

18. All trapezoids are rectangles.

19. Some rectangles are rhombuses.

20. Some squares are trapezoids.

21. All quadrilaterals are squares.

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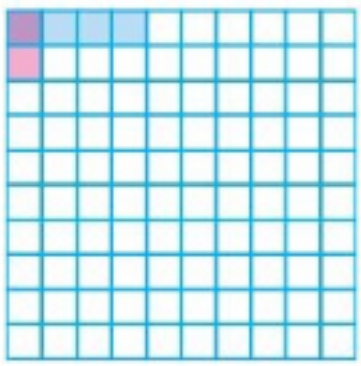
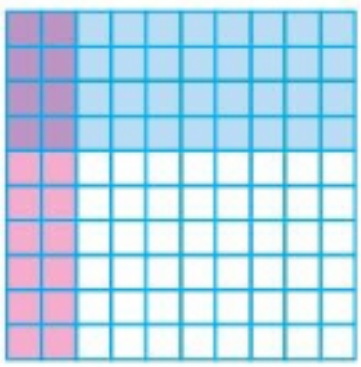
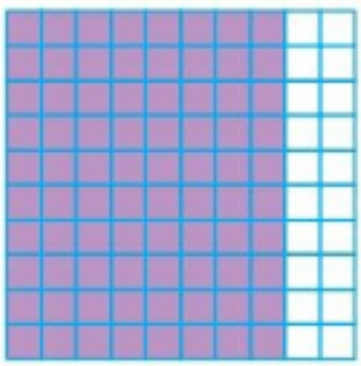
Name _____

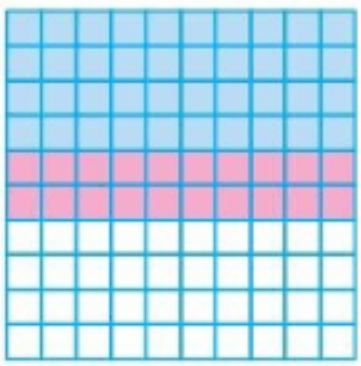
Cumulative Practice 1–14

1. Which model shows 0.4×0.2?

Ⓐ 

Ⓑ 

Ⓒ 

Ⓓ 

---

2. A triangle has angle measures of 82°, 53°, and 45°. Classify the triangle by its angles.

Ⓐ acute

Ⓑ equiangular

Ⓒ obtuse

Ⓓ right

---

3. Which expressions have an estimated difference of $\frac{1}{2}$?

☐ $\frac{11}{12} - \frac{7}{8}$

☐ $\frac{9}{10} - \frac{1}{5}$

☐ $\frac{4}{3} - \frac{1}{2}$

☐ $\frac{15}{16} - \frac{4}{9}$

☐ $\frac{5}{4} - \frac{11}{20}$

☐ $\frac{1}{8} - \frac{1}{6}$

---

4. A rectangular prism has a volume of 288 cubic centimeters. The height of the prism is 8 centimeters. The base is a square. What is a side length of the base?

Ⓐ 6 cm Ⓑ 9 cm Ⓒ 18 cm Ⓓ 36 cm

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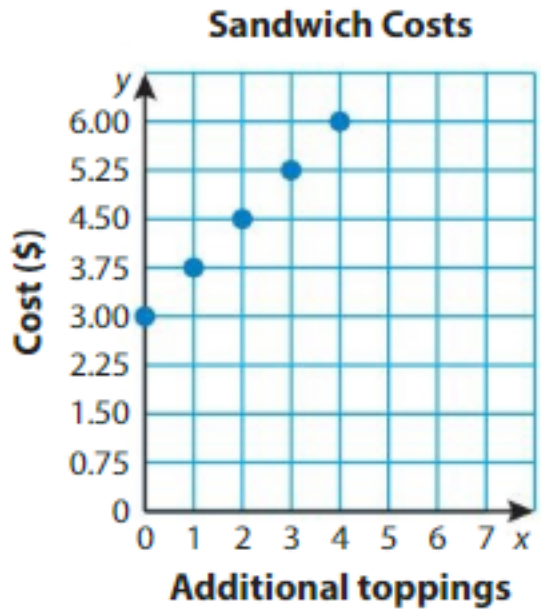
5. A sandwich at a food stand costs $3.00. Each additional topping costs the same extra amount. The coordinate plane shows the costs, in dollars, of sandwiches with different numbers of additional toppings. What is the cost of a sandwich with 3 additional toppings?



Ⓐ $0.00

Ⓑ $3.00

Ⓒ $5.25

Ⓓ $6.00

---

6. Which statements are *true*?

☐ All rhombuses are rectangles.

☐ All squares and rectangles are parallelograms.

☐ All squares are rhombuses.

☐ Every trapezoid is a quadrilateral.

---

7. Your friend makes a volcano for a science project. She uses 10 cups of vinegar. How many pints of vinegar does he use?



Ⓐ 2 pints

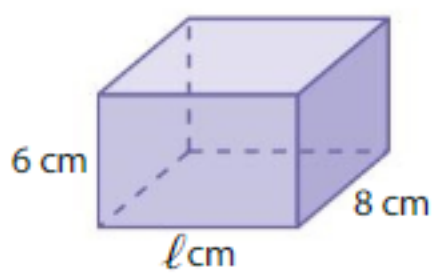
Ⓑ 5 pints

Ⓒ 20 pints

Ⓓ 40 pints

---

8. The volume of the rectangular prism is 432 cubic centimeters. What is the length of the prism?



Ⓐ 9 cm

Ⓑ 18 cm

Ⓒ 384 cm

Ⓓ 418 cm

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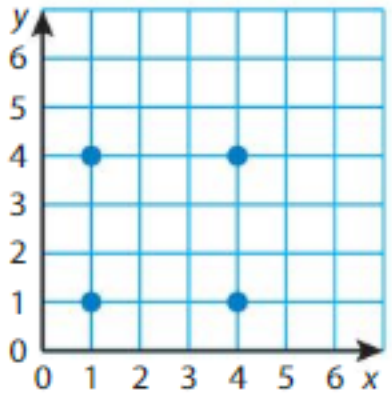
9. Descartes draws a pentagon by plotting another point in the coordinate plane and connecting the points. Which coordinates could he use?



- ☐ (0, 3)
- ☐ (2, 4)
- ☐ (3, 5)
- ☐ (6, 2)

---

10. Newton rides to the dog park in a taxi. He owes the driver $12. He calculates the driver's tip by multiplying $12 by 0.15. How much does he pay the driver, including the tip?



- Ⓐ $1.80
- Ⓑ $10.20
- Ⓒ $13.80
- Ⓓ $30.00

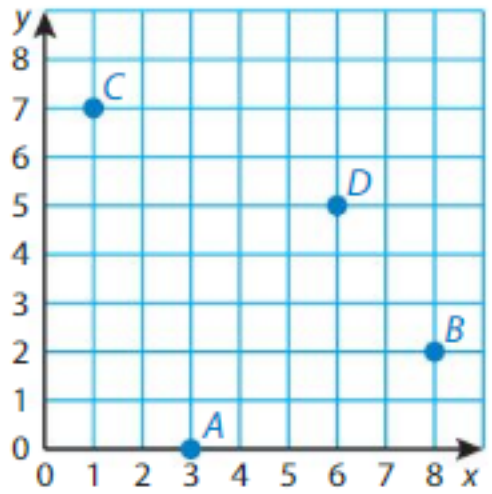
---

11. A quadrilateral has four sides with the same length, two pairs of parallel sides, and four 90° angles. Classify the quadrilateral in as many ways as possible.

- ☐ square
- ☐ trapezoid
- ☐ parallelogram
- ☐ rhombus

---

12. Which ordered pair represents the location of a point shown in the coordinate plane?



- Ⓐ (0, 3)
- Ⓑ (1, 7)
- Ⓒ (5, 6)
- Ⓓ (2, 8)

---

13. What is the product of 5,602 and 17?



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14. Which pair of points do *not* lie on a line that is perpendicular to the *x*-axis?

Ⓐ (1, 6) and (1, 8)

Ⓑ (4, 0) and (4, 4)

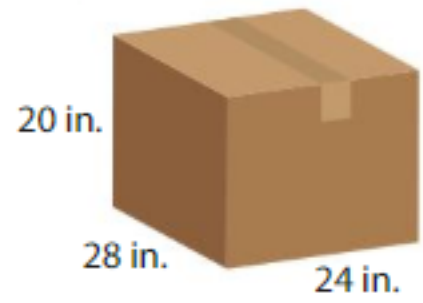
Ⓒ (5, 1) and (5, 3)

Ⓓ (7, 2) and (6, 2)

---

15. Newton has a gift in the shape of a rectangular prism that has a volume of 10,500 cubic inches. The box he uses to ship the gift is shown.

Think
Solve
Explain



Part A What is the volume of the box?

Part B What is the volume, in cubic inches, of the space inside the box that is *not* taken up by the gift? Explain.

---

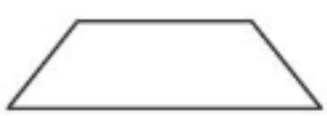
16. Which expressions have a product greater than $\frac{5}{6}$?

☐ $\frac{5}{6} \times \frac{7}{8}$ ☐ $\frac{5}{6} \times \frac{1}{3}$ ☐ $\frac{5}{6} \times \frac{9}{9}$

☐ $\frac{5}{6} \times \frac{3}{2}$ ☐ $\frac{5}{6} \times \frac{4}{5}$ ☐ $\frac{5}{6} \times 1\frac{3}{4}$

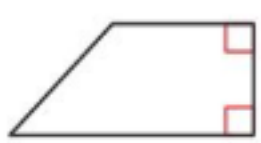
---

17. Descartes is thinking of a shape that has 4 sides, only one pair of parallel sides, and angle measures of 90°, 40°, 140°, and 90°. Which is Newton's shape?

Ⓐ 

Ⓑ 

Ⓒ 

Ⓓ 

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18. Which rectangular prisms have a volume of 150 cubic feet?

☐ length = 2 ft, height = 25 ft, width = 3 ft ☐ length = 50 ft, height = 50 ft, width = 50 ft

☐ length = 3 ft, height = 10 ft, width = 5 ft ☐ length = 6 ft, height = 5 ft, width = 5 ft

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Name _____

STEAM Performance Task 1–14

Each student in your grade makes a constellation display by making holes for the stars of a constellation on each side of the display. Each display is a rectangular prism with a square base.



1. Your science teacher orders a display for each student. The diagram shows the number of packages that can fit in a shipping box.



a. How many displays come in one box?

b. There are 108 students in your grade. How many boxes of displays does your teacher order? Explain.

c. The volume of the shipping box is 48,000 cubic inches. What is the volume of each display?

d. The height of each display is 15 inches. What are the dimensions of the square base?

e. Estimate the dimensions of the shipping box.

f. You paint every side of the display except the bottom. What is the total area you will paint?

g. You need a lantern to light up your display. Does the lantern fit inside of your display? Explain.



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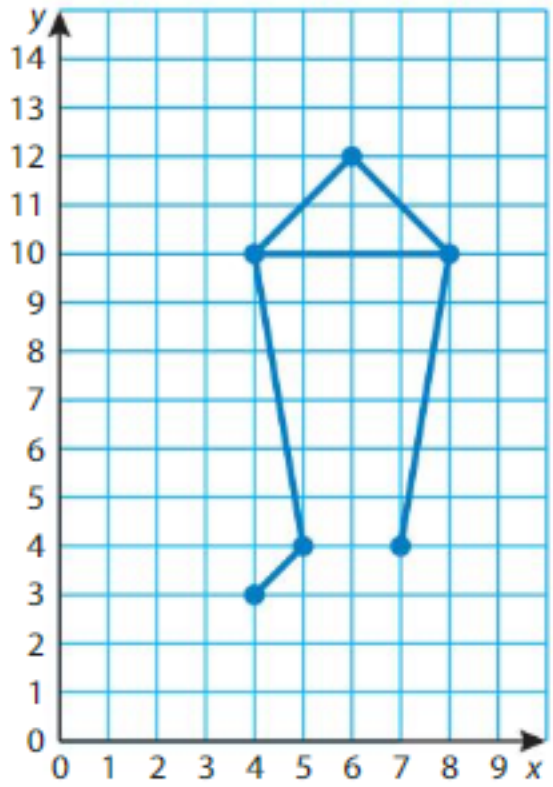
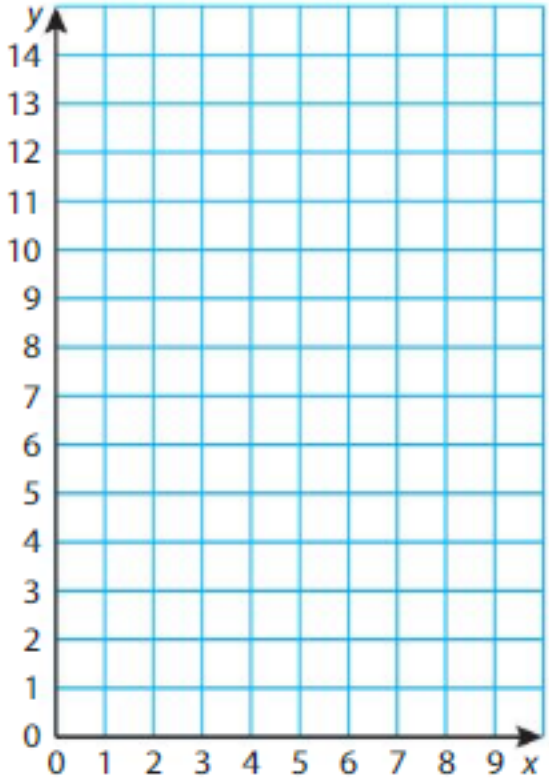
2. On one side of your display, you create an image of the constellation Libra. Each square on the grid is 1 square inch.



a. Classify the triangle formed by the points of the constellation.

b. What are the coordinates of the points of the constellation?

c. What is the height of the constellation on your display?



3. You use the coordinate plane to create the image of the Big Dipper.

a. Plot the points $A(6, 2)$, $B(8, 2)$, $C(7, 6)$, $D(5, 5)$, $E(7, 9)$, $F(6, 12)$, and $G(4, 14)$.

b. Draw lines connecting the points of quadrilateral $ABCD$. Draw $\overline{CE}$, $\overline{EF}$, and $\overline{FG}$.

c. Is quadrilateral $ABCD$ a trapezoid? How do you know?

4. Use the Internet or some other resource to learn more about constellations. Write one interesting thing you learn.

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Glossary

A

acute triangle [triángulo actángulo]

A triangle that has three acute angles



B

base (of a power) [base]

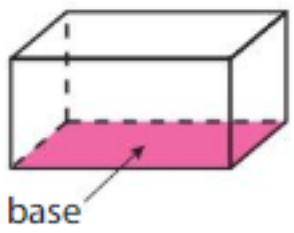
The repeated factor in a power

$$10 \times 10 \times 10 \times 10 \times 10 = 10^5$$

(base: 10)

base (of a prism) [base]

The bottom face of a right rectangular prism



C

common denominator [factor común]

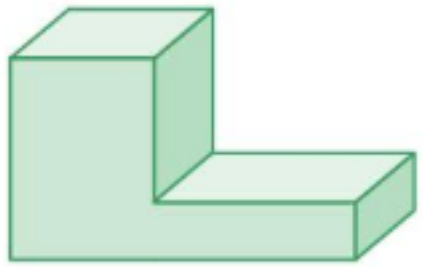
A number that is the denominator of two or more fractions

$\frac{3}{4}$ $\frac{2}{4}$

4 is a common denominator for $\frac{3}{4}$ and $\frac{2}{4}$.

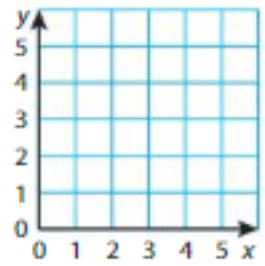
composite figure [figura compuesta]

A figure that is made of two or more solid figures



coordinate plane [plano de coordenadas]

A plane that is formed by the intersection of a horizontal number line and a vertical number line



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cubic unit [unidad cúbica]

A unit used to measure volume

cubic centimeter
cubic inch
cubic foot

D

data [datos]

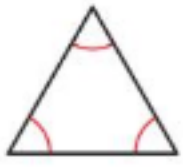
Values collected from observations or measurements

Day	1	2	3	4	5
Packages Delivered	128	154	137	168	193

E

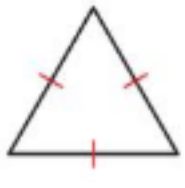
equiangular triangle [triángulo equiángulo]

A triangle that has three angles with the same measure



equilateral triangle [triángulo equilátero]

A triangle that has three sides with the same length



evaluate [evaluar]

To find the value of a numerical expression

$$\underbrace{15 + 6 \times 5}_{\text{numerical expression}} = \underbrace{45}_{\text{value}}$$

exponent [exponente]

The number of times the base of a power is used as a factor

exponent

$$10 \times 10 \times 10 \times 10 \times 10 = 10^5$$

F

fluid ounces (fl oz) [onzas fluidas (oz fl)]

A customary unit used to measure capacity



There are 8 fluid ounces in 1 cup.

I

improper fraction [fracción impropia]

A fraction greater than 1

$$\frac{3}{2}, \frac{6}{3}, \frac{9}{4}$$

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inverse operations
[operaciones inversas]

Operations that "undo" each other, such as addition and subtraction, or multiplication and division

Addition $19 + 12 = 31$	⟷	Subtraction $31 - 12 = 19$
Multiplication $18 \times 4 = 72$	⟷	Division $72 \div 4 = 18$

isosceles triangle **[triángulo isósceles]**

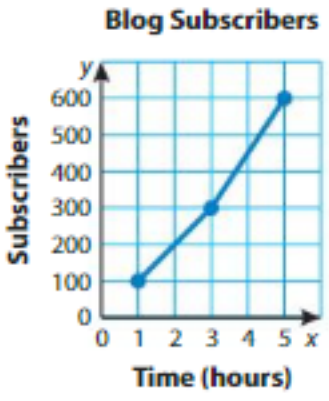
A triangle that has two sides with the same length



L

line graph **[gráfica de líneas]**

A graph that uses line segments to show how data values change over time



M

milligrams (mg) **[miligramos (mg)]**

A metric unit used to measure mass



One piece of salt weighs about 1 milligram.

N

numerical expression
[expresión numérica]

An expression that contains numbers and operations

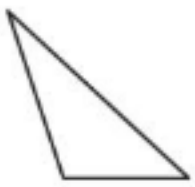
$31 + 56$

$19 - 18 \div 6$

O

obtuse triangle
[triángulo obtusángulo]

A triangle that has one obtuse angle



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order of operations
[orden de las operaciones]

A set of rules for evaluating expressions

Order of Operations
(with Grouping Symbols)

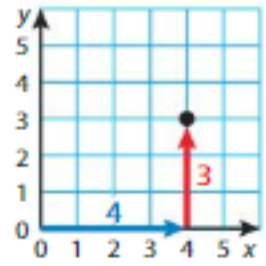
1. Perform operations in grouping symbols.
2. Multiply and divide from left to right.
3. Add and subtract from left to right.

ordered pair **[par ordenado]**

A pair of numbers that is used to locate a point in a coordinate plane

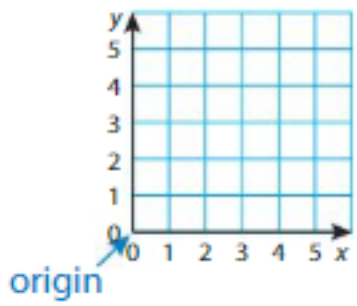
ordered pair: (4, 3)

x-coordinate *y*-coordinate



origin **[origen]**

The point, represented by the ordered pair (0, 0), where the *x*-axis and the *y*-axis intersect in a coordinate plane



overestimate **[sobrestimar]**

An estimate that is greater than the actual value

38×14

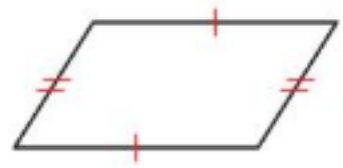
$40 \times 15 = 600$

overestimate

P

parallelogram **[paralelogramo]**

A quadrilateral that has two pairs of parallel sides



period **[período]**

Each group of three digits separated by commas in a multi-digit number

period period

Thousands Period			Ones Period		
Hundreds	Tens	Ones	Hundreds	Tens	Ones
5	3	8,	7	7	4

power **[potencia]**

A product of repeated factors

$10 \times 10 \times 10 \times 10 \times 10 = 10^5$

power

proper fraction **[fracción propia]**

A fraction less than 1

$\frac{1}{2}, \frac{2}{3}, \frac{3}{4}$

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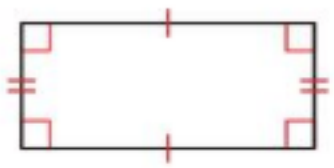
R

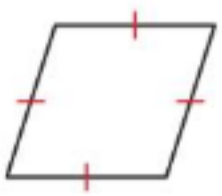
rectangle [rectángulo]

A parallelogram that has four right angles



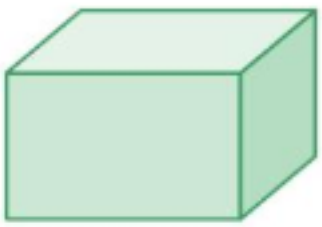
rhombus [rombo]

A parallelogram that has four sides with the same length



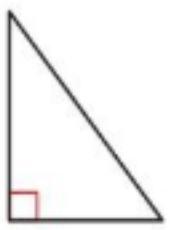
right rectangular prism [prisma rectangular derecho]

A solid figure with six rectangular faces



right triangle [triángulo rectángulo]

A triangle that has one right angle



S

scalene triangle [triángulo escaleno]

A triangle that has no sides with the same length



simplest form [mínima expresión]

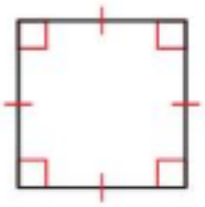
When the numerator and denominator of a fraction have no common factors other than 1

$$\frac{2}{6} = \frac{1}{3}$$

↑ simplest form

square [cuadrado]

A parallelogram that has four right angles and four sides with the same length



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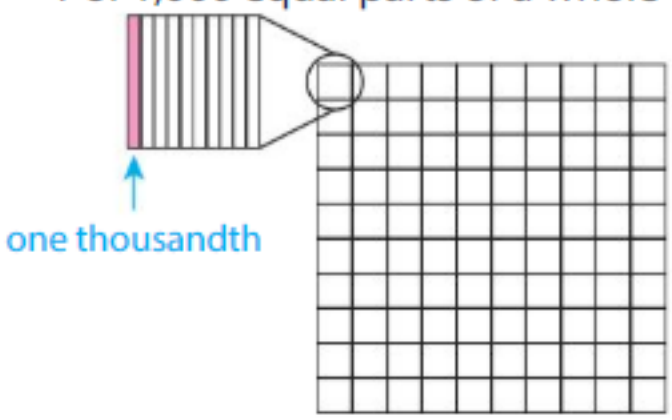
T

thousandth [milésimo]

1 of 1,000 equal parts of a whole



thousandths place
[posición de los milésimos]

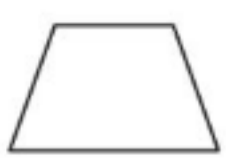
The third place to the right of the decimal point

0.001

thousandths place

trapezoid [trapecio]

A quadrilateral that has exactly one pair of parallel sides



U

underestimate [subestimar]

An estimate that is less than the actual value

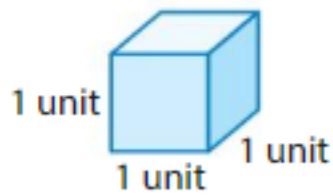
12×33

$10 \times 30 = 300$

underestimate

unit cube [cubo unitaria]

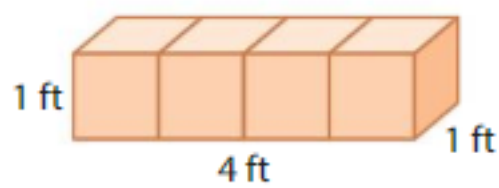
A cube that measures one unit on each side



V

volume [volumen]

A measure of the amount of space that a solid figure occupies



The volume of the figure is 4 cubic feet.

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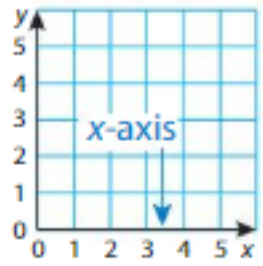
X

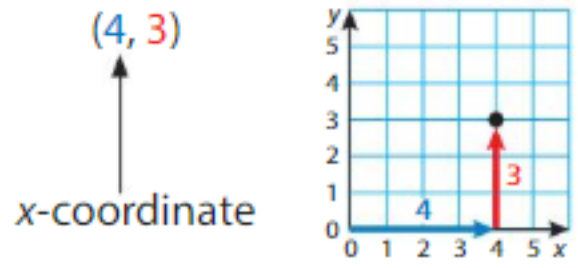
x-axis [eje x]

The horizontal number line in a coordinate plane



x-coordinate [coordenada x]

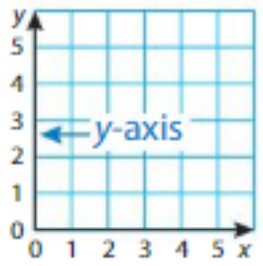
The first number in an ordered pair, which gives the horizontal distance from the origin along the x-axis



Y

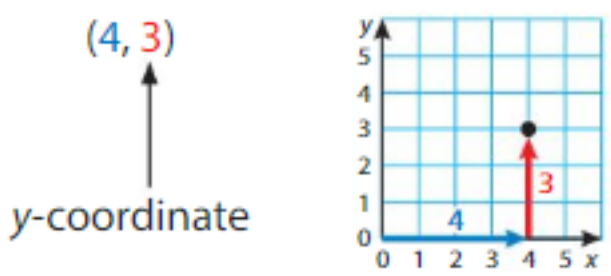
y-axis [eje y]

The vertical number line in a coordinate plane



y-coordinate [coordenada y]

The second number in an ordered pair, which gives the vertical distance from the origin along the y-axis



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Reference Sheet

Symbols

$=$	equals	A	point A	$\angle ABC$	angle ABC
$>$	greater than	$\overleftrightarrow{AB}$	line AB	$^\circ$	degree(s)
$<$	less than	$\overrightarrow{AB}$	ray AB	$^\circ C$	degrees Celsius
$\perp$	is perpendicular to	$\overline{AB}$	line segment AB	$^\circ F$	degrees Fahrenheit
$\parallel$	is parallel to			(x, y)	ordered pair

Length

Metric	Customary
1 centimeter (cm) = 10 millimeters (mm)	1 foot (ft) = 12 inches (in.)
1 meter (m) = 100 centimeters	1 yard (yd) = 3 feet
1 kilometer (km) = 1,000 meters	1 mile (mi) = 1,760 yards

Mass



1 gram (g) = 1,000 milligrams (mg)

1 kilogram (kg) = 1,000 grams

Weight



1 pound (lb) = 16 ounces (oz)



1 ton (T) = 2,000 pounds

Capacity



Metric

1 liter (L) = 1,000 milliliters (mL)

Customary



1 cup (c) = 8 fluid ounces (fl oz)



1 pint (pt) = 2 cups



1 quart (qt) = 2 pints



1 gallon (gal) = 4 quarts

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