7-1

1. Write the ratio $\frac{36}{96}$ in simplest form.

A. 13/32
B. 3/8
C. 5/12
D. 9/16

---

2. Express 20 hours to 3 days as a ratio in simplest form.

A. 2/7
B. 4/9
C. 5/18
D. 1/3

---

3. Solve $\frac{7}{9} = \frac{x}{108}$.

A. 91
B. 72
C. 84
D. 77

---

4. Solve $\frac{24}{34} = \frac{4y+12}{85}$ for y.

A. 11
B. 13
C. 14

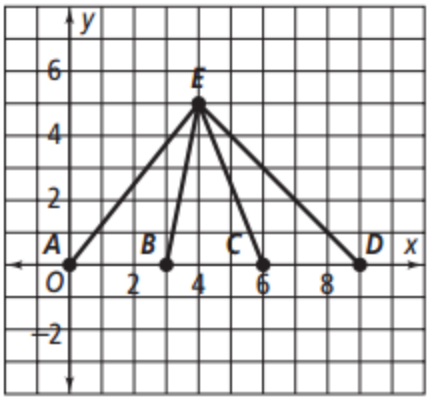
D. 12

5.If a car can travel 46 miles using 2 gallons of gasoline, how far can it travel if it uses 9 gallons of gasoline?

A. 184 miles
B. 207 miles
C. 196 miles
D. 174 miles

---

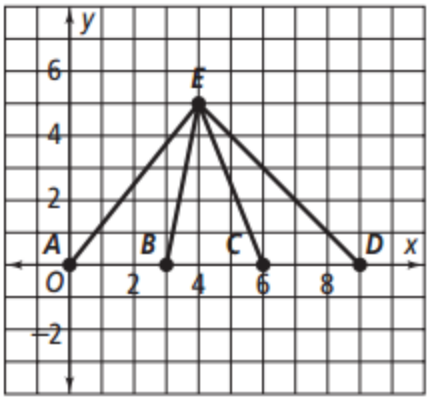
6. Use the diagram below. Write $\frac{AD}{AB}$ in simplest form.



A. 8/2
B. 4/1
C. ¼
D. 2/8

---

7. Use the diagram below. What is $\frac{\text{slope of } \overline{BE}}{\text{slope of } \overline{AE}}$ in simplest form?



A. 5/4
B. ⅘
C. 4/1
D. ¼

---

8. The measures of two complementary angles are in the ratio 2:3. What is the measure of the smaller angle?

A. 18
B. 36
C. 54
D. 60

---

9. The measures of two supplementary angles are in the ratio 4:11. What is the measure of the larger angle?

A. 12
B. 48
C. 132

D. 115

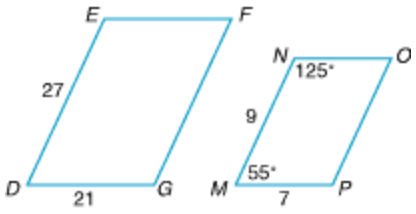
---

10. The extremes of a proportion are 4 and 14. Which of the following pairs could be the means of the proportion?

A. 2 and 28
B. 5 and 11
C. 6 and 9
D. 7 and 8

7-2

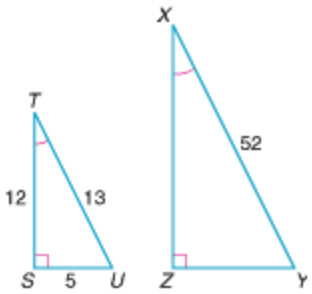
1. If $\square DEFG \sim \square MNOP$, what is $m\angle F$?



A. 27
B. 125
C. 55
D. 21

---

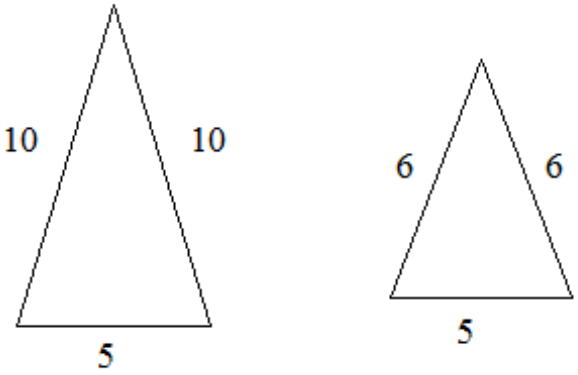
2. If $\triangle STU \sim \triangle ZXY$, What is ZX?



A. 48
B. 25
C. 60
D. 65

---

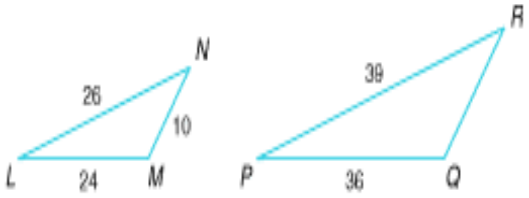
3. Are the two figures similar? Why or why not?



A. yes; all corresponding sides are proportional and angles are congruent
B. yes; all corresponding angles are proportional and sides are congruent
C. no; corresponding sides are not proportional and angles are not congruent
D. no; all corresponding angles are congruent but the sides are not proportional

---

4. Given $\triangle LMN \sim \triangle PQR$, find QR.



A. 6
B. 7
C. 12
D. 15

---

5. You make a scale drawing of a tree using the scale 5 in. = 27 ft. If the tree is 67.5 ft. tall, how tall is the scale drawing?

A. 10 in.
B. 11.5 in.
C. 12 in.
D. 12.5 in.

---

6. You make a scale drawing of a garden plot using the scale 2 in. = 17 ft. If the length of a row of vegetables on the drawing is 3 in, how long is the actual row?

A. 17 ft.
B. 25.5 ft.
C. 34 ft.
D. 42.5 ft.

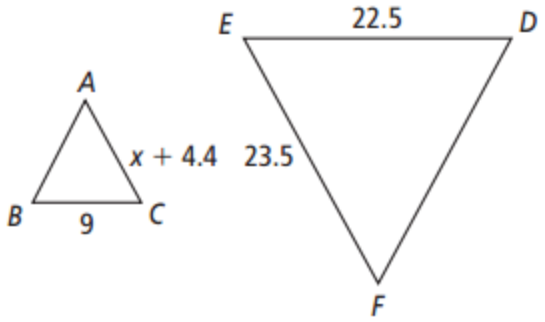
---

7. The scale factor of Δ *RST* and Δ *DEC* is 3 : 13. What is the scale factor if Δ *DEC* to Δ *RST*?

A. 3 : 13
B. 1 : 39
C. 39 : 1
D. 13 : 3

---

8. Δ *ACB* ~ Δ *FED*. What is the value of *x*?



A. 4
B. 4.2
C. 4.5
D. 5

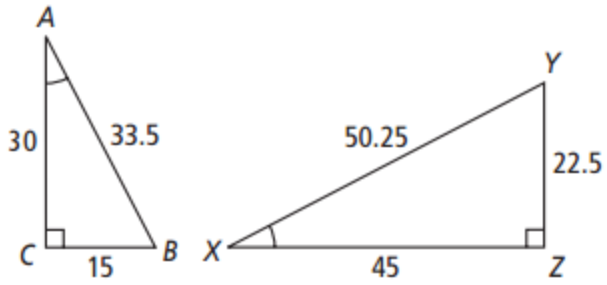
---

9. *MNOP* ~ *QRST* with a scale factor of 5 : 4. *MP* = 85 mm. What is the value of *QT*?

A. 60 mm.
B. 68 mm.
C. 84 mm.
D. 106.25 mm.

---

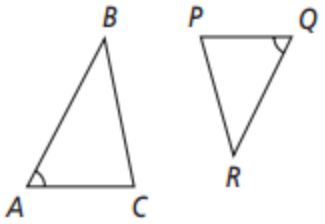
10. Are the triangles below similar? Why or why not?

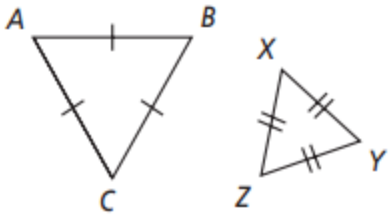


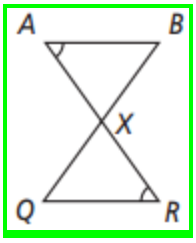
A. yes, all the angles are congruent and corresponding sides are proportional.
B. no, not all the angles are congruent.
C. no, corresponding sides are not proportional.
D. no, the angles are not proportional.

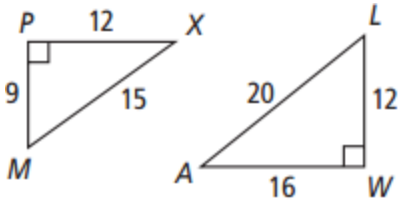
7-3

1. Which pair of triangles can be proven similar by the AA~ Postulate?

A. 

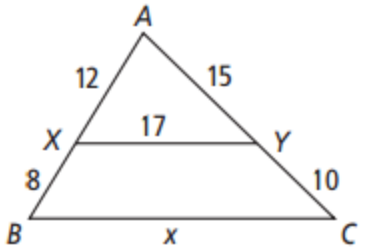
B. 

C. 

D. 

---

2. $\triangle AXY \sim \triangle ABC$. What is the value of x?



A. $10\frac{1}{5}$

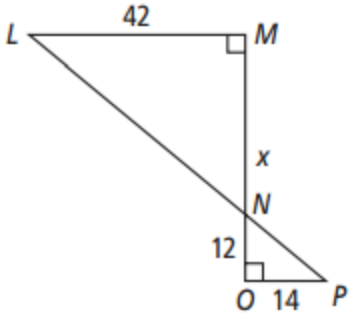
B. 19

C. $11\frac{1}{3}$

D. $28\frac{1}{3}$

---

3. Δ *LMN* ~ Δ *PON*. What is the value of *x*?



A. 36

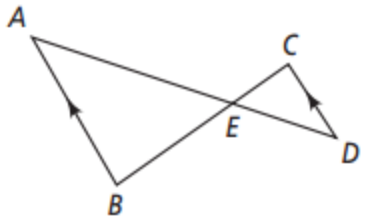
B. 20

C. 25

D. $28\frac{1}{3}$

---

4. Can the triangles below be proven similar? If so, write a similarity statement and name the theorem or postulate used to prove similarity.



A. $\triangle AEB \sim \triangle DEC$ by SAS~ Theorem

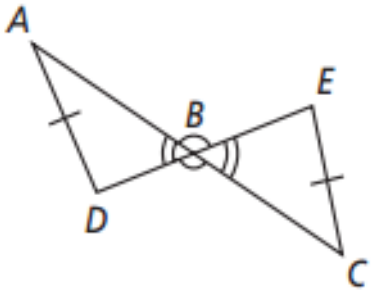
B. $\triangle AEB \sim \triangle DEC$ by AA~ Postulate

C. $\triangle AEB \sim \triangle CED$ by AA~ Postulate

D. No, not enough information is given to prove similarity.

---

5. Can the triangles below be proven similar? If so, write a similarity statement and name the theorem or postulate used to prove similarity.



A. $\triangle ABD \sim \triangle CBE$ by AA~ Postulate

B. $\triangle ABD \sim \triangle CBE$ by SAS~ Theorem

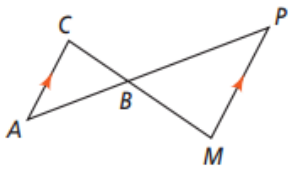
C. $\triangle ABD \sim \triangle CBE$ by SSS~ Theorem

D. No, not enough information is given to prove similarity.

---

6. Complete the proof.

Given: $\overline{AC} \parallel \overline{MP}$
Prove: $\triangle ABC \sim \triangle PBM$



Statements	Reasons
1) $\overline{AC} \parallel \overline{MP}$	1) a.
2) $\angle A \cong \angle P$	2) If parallel lines are cut by a transversal, alternate interior angles are congruent.
3) $\angle ABC \cong \angle PBM$	3) b.
4) $\triangle ABC \sim \triangle PBM$	4) c.

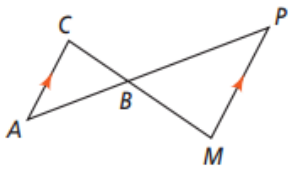
What justification can be used for blank **a**?

A. Parallel lines are congruent.
B. Congruent lines are parallel.
C. If parallel lines are cut by a transversal, corresponding angles are congruent.
D. Given

---

7. Complete the proof.

Given: $\overline{AC} \parallel \overline{MP}$
Prove: $\triangle ABC \sim \triangle PBM$



Statements	Reasons
1) $\overline{AC} \parallel \overline{MP}$	1) a.
2) $\angle A \cong \angle P$	2) If parallel lines are cut by a transversal, alternate interior angles are congruent.
3) $\angle ABC \cong \angle PBM$	3) b.
4) $\triangle ABC \sim \triangle PBM$	4) c.

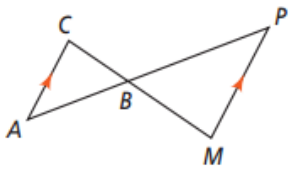
What justification can be used for blank **b**?

A. Vertical angles are congruent.
B. If parallel lines are cut by a transversal, alternate interior angles are congruent.
C. If parallel lines are cut by a transversal, corresponding angles are congruent.
D. Given.

---

8. Complete the proof.

Given: $\overline{AC} \parallel \overline{MP}$
Prove: $\triangle ABC \sim \triangle PBM$



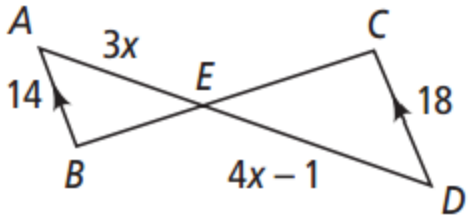
Statements	Reasons
1) $\overline{AC} \parallel \overline{MP}$	1) a.
2) $\angle A \cong \angle P$	2) If parallel lines are cut by a transversal, alternate interior angles are congruent.
3) $\angle ABC \cong \angle PBM$	3) b.
4) $\triangle ABC \sim \triangle PBM$	4) c.

What justification can be used for blank **c**?

A. SAS~ Theorem
B. AA~ Postulate
C. SSS~ Theorem
D. SSA~ Theorem

---

9. Find the value of *x* in the diagram below.

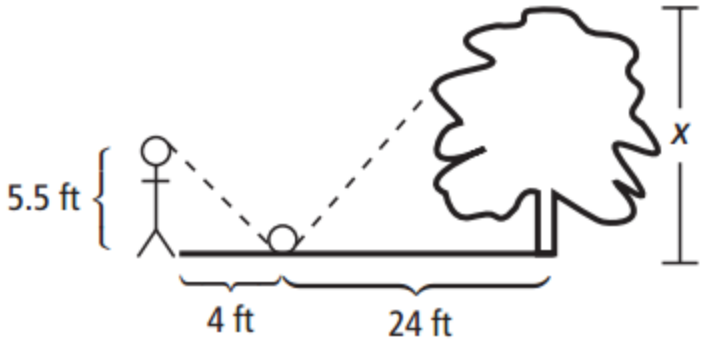


A. 1
B. 7
C. 7/15
D. 15/7

---

10. Rachel placed a mirror on the ground 24 ft from the base of an oak

tree. She walked backward until she saw the top of the tree in the middle of the mirror. At this point, her eyes were 5.5 ft. above the ground and her feet were 4 ft from the mirror. How tall is the oak tree?



A. 33 ft.

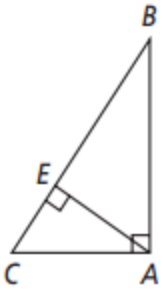
B. 17.5 ft.

C. 40 ft.

D. 25.5 ft

7-4

1. Which segment of the hypotenuse is adjacent to $\overline{AB}$ in the diagram below?



A. $\overline{EC}$

B. $\overline{AC}$

C. $\overline{AE}$

D. $\overline{BE}$

---

2. What is the geometric mean of 7 and 12?

A. $1\frac{5}{7}$

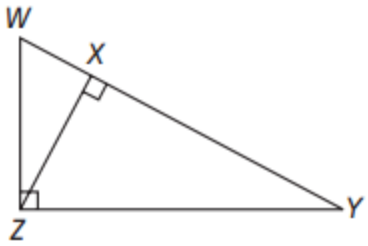
B. 9.5

C. $2\sqrt{21}$

D. $4\sqrt{21}$

---

3. Which similarity statement is true?



A. $\Delta WYZ \sim \Delta XZW \sim \Delta XYZ$

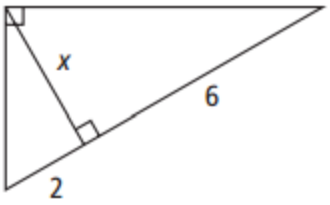
B. $\Delta WYZ \sim \Delta WZX \sim \Delta ZYX$

C. $\Delta YZW \sim \Delta XZW \sim \Delta XZY$

D. $\Delta YZW \sim \Delta ZXW \sim \Delta ZYX$

---

4. What is the value of *x* in the figure below?



A. $2\sqrt{3}$

B. $4\sqrt{3}$

C. 4

D. 6

---

5. The altitude of the hypotenuse of a right triangle divides the hypotenuse into segments of lengths 14 and 8. What is the length of the altitude?

A. $2\sqrt{77}$

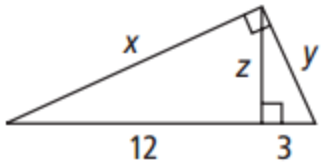
B. $4\sqrt{7}$

C. $4\sqrt{11}$

D. 11

---

6. Find the value of *x* in the figure below.



A. 6

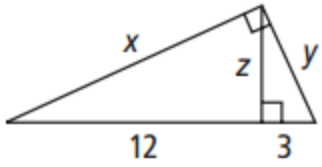
B. $3\sqrt{5}$

C. $9\sqrt{5}$

D. $6\sqrt{5}$

---

7. Find the value of *y* in the figure below.



A. 6

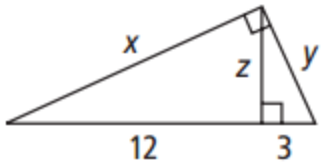
B. $3\sqrt{5}$

C. $9\sqrt{5}$

D. $6\sqrt{5}$

---

8. Find the value of z in the figure below.



A. 6

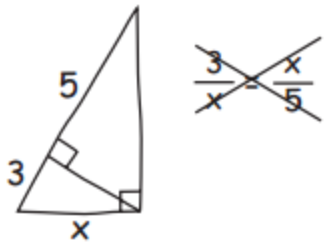
B. $3\sqrt{5}$

C. $9\sqrt{5}$

D. $6\sqrt{5}$

---

9. A student solves the following problem incorrectly. Describe the student's error.



A. The student did not use the segment adjacent to the leg when setting up the proportion.

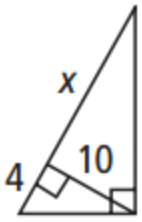
B. The student did not use the length of the hypotenuse when setting up the proportion.

C. The student did not find a geometric mean.

D. There is no error. The student solve the problem correctly.

---

10. Find *x* in the figure below.



A. $2\sqrt{10}$

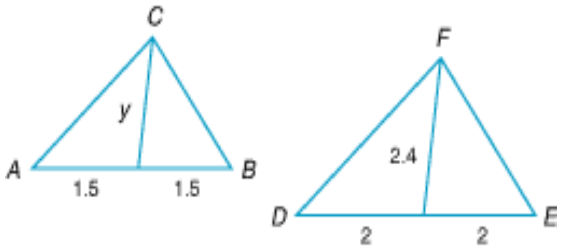
B. 5

C. $4\sqrt{5}$

D. $4\sqrt{10}$

7-5

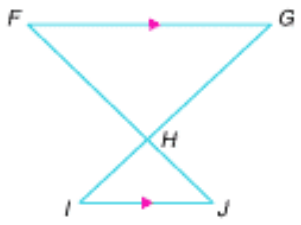
1. $\Delta ABC \sim \Delta DEF$. Find the value of y.



A. 2
B. 1.8
C. 1.9
D. 2.2

---

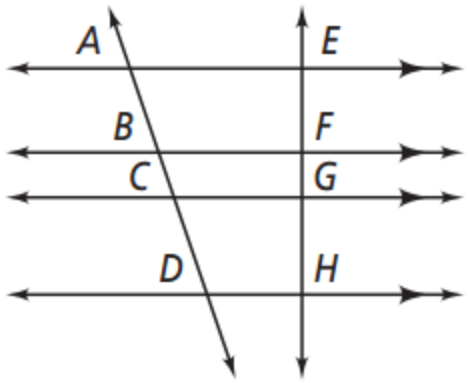
2. In the figure, $\overleftrightarrow{FG} \parallel \overleftrightarrow{IJ}$. If $FH = 12$, $HJ = 3$, and the perimeter of $\Delta HIJ = 13$, then what is the perimeter of ΔFGH?



A. 52
B. 48
C. 25
D. 36

3. Use the diagram below to fIll in the blank to make the proportion true.

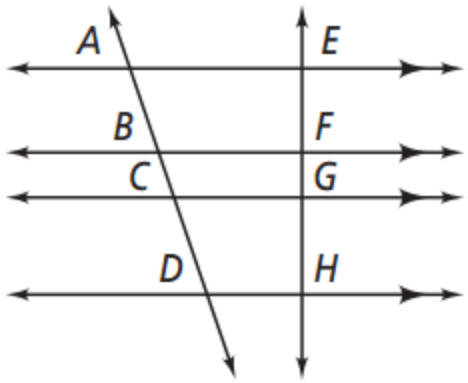
$$\frac{AB}{\square} = \frac{EF}{GH}$$



A. *AD*
B. *DH*
C. *CD*
D. *BC*

---

4. Use the diagram below. Which proportion is ***not*** true?



A. $\frac{BC}{CD} = \frac{FG}{GH}$

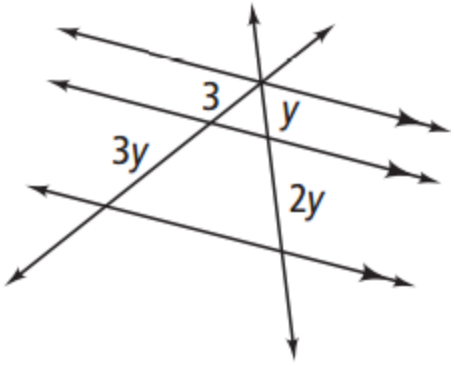
B. $\frac{AC}{CD} = \frac{EG}{GH}$

C. $\frac{BD}{FH} = \frac{AD}{EH}$

D. $\frac{AB}{AE} = \frac{EF}{BF}$

---

5. What is the value of *y* in the figure below?



A. 2

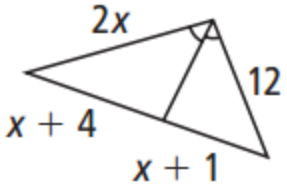
B. 4

C. 3

D. 6

---

6. What is the value of *x* in the figure below?



A. 3
B. 8
C. 6
D. 12

---

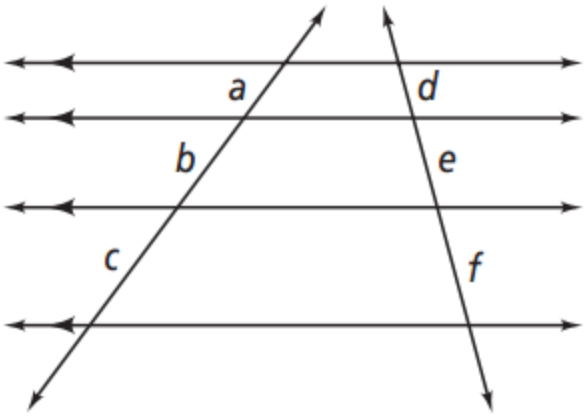
7. In $\triangle$ *DEF*, the bisector of $\angle$ *F* divides the opposite sides into segments that are 4 and 9 in. long. The side of the triangle adjacent to the 4 in. segment is 6 in. long. To the nearest tenth of an inch, how long is the third side of the triangle?

A. 2.7 in.
B. 6 in.
C. 13 in.
D. 13.5 in.

---

8. Use the figure below to complete the proportion.

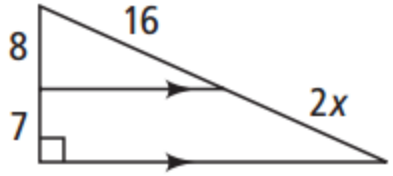
$$\frac{a}{c} = \frac{\square}{f}$$



A. *b*
B. *e*
C. *f*
D. *d*

---

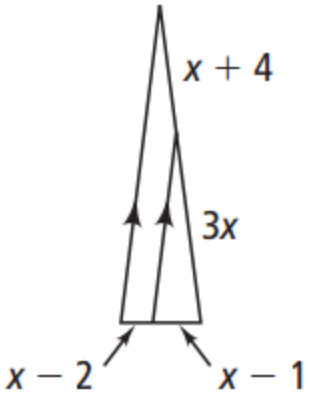
9. Find the value of *x* in the figure below.



A. 14
B. 7
C. 3.5
D. 9.1

---

10. Find the value of *x* in the figure below.



A. 4
B. ½
C. 2
D. 1/4