3rd Grade Math: Division Without Remainder and Regrouping

What is Division?

- **Division** is when you take a large number (called the **dividend**) and split it into equal groups. The number you divide by is called the **divisor**, and the answer you get is called the **quotient**.

In this lesson, we'll talk about **division without a remainder** and how to divide using **regrouping**.

Division Without a Remainder

When we divide a number and it splits evenly into groups, we say the division has **no remainder**. This means that after dividing, there's nothing left over.

Example 1:

$$15 \div 5 = 3$$

- **15** is the dividend.
- **5** is the divisor.
- **3** is the quotient.

Here, 15 divides evenly into 3 groups of 5, with no leftover.

Example 2:

$$24 \div 8 = 3$$

- **24** is the dividend.
- **8** is the divisor.
- **3** is the quotient.

In this case, 24 divides perfectly into 3 groups of 8, with no leftover, so there's no remainder.

Division with Regrouping

Sometimes, division involves numbers with more than one digit, and we need to break it down into smaller parts to divide correctly. This is called **regrouping**. We divide each part (tens, ones, etc.) step by step.

Example:

$$96 \div 3$$

Let's solve this by dividing step by step.

1. **Divide the tens**:
   - Look at the first digit in 96 (9, which represents 90).
   - Divide 9 by 3.
   - $9 \div 3 = 3$ | $9 \div 3 = 3$, so we put 3 in the tens place of the quotient.
2. **Bring down the ones**:
   - Now, bring down the 6 (the ones place).
3. **Divide the ones**:
   - Divide 6 by 3.
   - $6 \div 3 = 2$ | $6 \div 3 = 2$, so we put 2 in the ones place of the quotient.

The final answer is:

$$96 \div 3 = 32$$

Step-by-Step Division with Regrouping:

4. **Start with the first digit** of the dividend (tens place).
5. **Divide the first digit** by the divisor and write the result in the quotient.
6. **Bring down the next digit** (ones place) and divide.
7. **Continue** this process until you've divided all digits.

Practice Problems:

8. 84 ÷ 4
9. 72 ÷ 6
10. 56 ÷ 7

Solutions:

11. $84 \div 4 = 21$ | $84 \div 4 = 21$

12. $72 \div 6 = 12$72÷6=12
13. $56 \div 7 = 8$56÷7=8

Conclusion:

- Division without a remainder happens when the number splits evenly.
- Regrouping helps when dividing multi-digit numbers. By working with one digit at a time, you can divide even large numbers easily!