Quotient and Remainder

Objective:

By the end of the lesson, students will be able to:

- Understand the concept of division, quotient, and remainder.
- Solve division problems that result in both quotients and remainders.

The **quotient** and **remainder** are important concepts in division.

1. **Quotient**: This is the number of times one number (the **dividend**) can be divided by another number (the **divisor**). It's the answer to a division problem, excluding any leftover amount.
2. **Remainder**: This is the leftover part when you divide a number and it doesn't divide evenly. The remainder is always smaller than the divisor.

Introduction:

- **Division** is when we split a number into equal parts.
- When we divide one number by another, the result is called the **quotient**, and if there's any leftover amount that doesn't fit into equal parts, it is called the **remainder**.

Key Vocabulary:

1. **Dividend**: The number you are dividing (the total amount).
2. **Divisor**: The number you are dividing by (the number of groups).
3. **Quotient**: The result of the division (how many times the divisor fits into the dividend).
4. **Remainder**: What's left over after dividing.

What is Division?

- **Division** is when we split a number into equal groups.
- The number we are dividing is called the **dividend**.
- The number we divide by is called the **divisor**.
- The answer to a division problem is called the **quotient**.
- Sometimes, there's a leftover part that doesn't fit into equal groups. This is called the **remainder**.

Understanding the Concepts

1. **Quotient**:

- The quotient is how many times the divisor fits into the dividend.

Example: $12 \div 3 = 4$

- In this example, 3 fits into 12 exactly 4 times. So, the **quotient** is 4.

2. **Remainder**:

- When the divisor doesn't divide the dividend perfectly, you get a leftover called the **remainder**.

Example: $13 \div 4 = 3\,R\,1$

- In this example, 4 fits into 13 three times, but there's 1 left over. So, the **quotient** is 3 and the **remainder** is 1.

Example:

If we divide 13 by 4:

- **13** is the dividend (the number being divided).
- **4** is the divisor (the number dividing the dividend).

Now, we ask: How many times does 4 go into 13?

- 4 goes into 13 **3 times**, which is the quotient.
- But there's still a leftover part: $13 - (4 \times 3) = 1$, so the **remainder** is 1.

Thus, when 13 is divided by 4:

- **Quotient** = 3
- **Remainder** = 1

In mathematical terms, we write it like this: $13 \div 4 = 3\,\mathrm{R}\,1$ This means 13 divided by 4 gives a quotient of 3 and a remainder of 1.

Another Example:

If we divide 20 by 6:

- 6 goes into 20 **3 times** (quotient is 3).
- The leftover part is $20 - (6 \times 3) = 2$ (remainder is 2).

So: $20 \div 6 = 3\,\mathrm{R}\,2$