LITTERA PUBLIC SCHOOL

Class 5 Ch-5 Division

The division is one of the four basic mathematical operations, the other three being addition, subtraction, and multiplication. In simple words, **division** can be defined as the splitting of a large group into smaller groups such that every group will have an equal number of items. It is an operation used for equal grouping and equal sharing in math. Let us learn about division operation in math in detail in this article.

What is Division?

The division is one of the basic arithmetic operations in math in which a larger number is broken down into smaller groups having the same number of items. For example, for a sports event, if 30 students need to be divided into groups of 5 students, then how many total groups will be formed? Such problems can be solved easily using the division operation. Here we need to divide 30 by 5. The result will be 30 ÷ 5 = 6. So, there will be 6 groups of 5 students in each. You can verify this value by multiplying 6 and 5, which will give you the original number, 30.

Division Definition

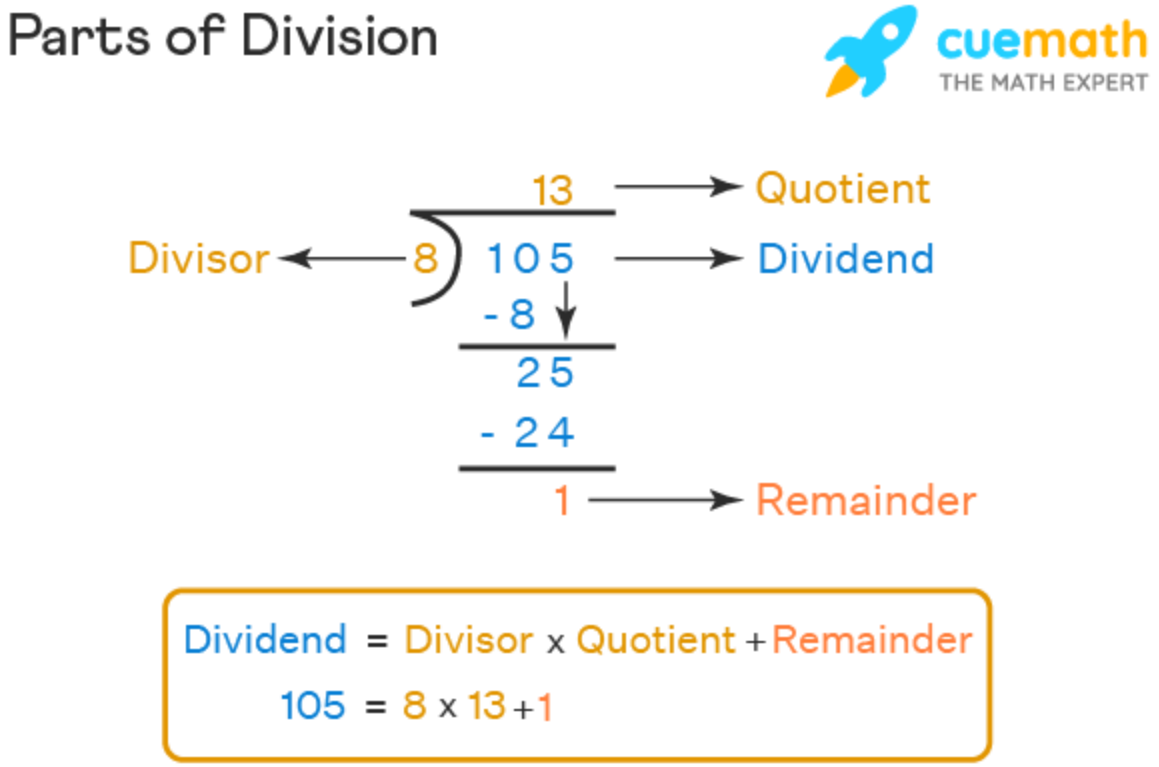
The division is the process of repetitive subtraction. It is the inverse of the multiplication operation. It is defined as the act of forming equal groups. While dividing numbers, we break down a larger number into smaller numbers such that the multiplication of those smaller numbers will be equal to the larger number taken. For example, 4 ÷ 2 = 2. This can be written as a multiplication fact as 2 × 2 = 4.

Division Symbol

The division is denoted by a mathematical symbol that consists of a small horizontal line with a dot each above and below the line. There are two basic division symbols that represent the division of two numbers. They are ÷ and **/.** For example, 4 ÷ 2 = 2, and 4/2 = 2.

Parts of Division

Parts of division mean the name of the terms associated with the division process. There are four parts of the division, which are dividend, divisor, quotient, and remainder. Let us look at an example of division given below and understand the meanings of these four parts of the division.



Here, when we divide 105 by 8, we get the values of a divisor, dividend, quotient, and remainder. Look at the table below to understand the meaning of these terms.

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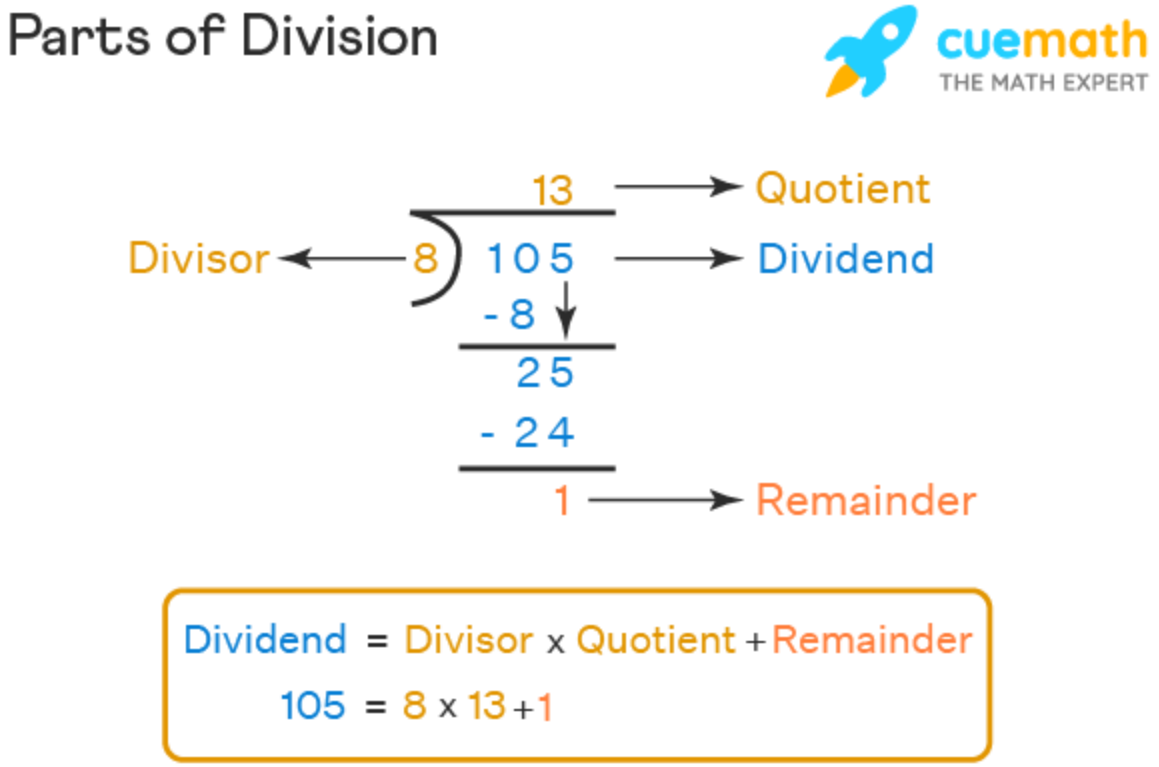

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Terms	Descriptions	Values
Dividend	The number that is to be divided	105
Divisor	The number of equal groups that are to be made, or the number by which we divide the dividend	8
Quotient	The value/answer obtained after performing the division	13
Remainder	The remaining or left out value that is not a part of any group	1

In the above image, it is written that "Dividend = Divisor × Quotient + Remainder". This equation satisfies the above values but will it be satisfying for values of dividend, divisor, quotient, and the remainder in every division? Let's find out.

How to do Division?

One-digit division can be done using multiplication tables. For example, to solve 24 ÷ 6, we just need to see what we need to multiply by 6 to get 24 as the answer. Clearly, 6 × 4 = 24, therefore 24 ÷ 6 = 4. When it comes to the division of numbers with greater numbers, then we can use the long division method. Let us take the example of 65 divided by 5 to understand it. Follow the steps below to learn how to do division:

- **Step 1:** Draw the division symbol ⟌ and write divisor (5) on its left side and dividend (65) enclosed under this symbol.
- **Step 2:** Take the first digit of the dividend from the left (6). Check if this digit is greater than or equal to the divisor. [If the first digit of the dividend is less than the divisor, then we consider the first two digits of the dividend]
- **Step 3:** Then divide it by the divisor and write the answer on top as the quotient. Here, the quotient of 6 ÷ 5 is 1.
- **Step 4:** Subtract the product of the divisor and the digit written in the quotient (5 × 1) from the first digit of the dividend and write the difference below. Here, the difference is 6 - 5 = 1.
- **Step 5:** Bring down the next digit of the dividend (if present). The next digit in the dividend is 5.
- **Step 6:** Repeat the same process until you get the remainder, less than the divisor.

Look at the image given below showing the above steps of division.

Division with Remainders

It is not always mandatory to have 0 as the remainder. If the dividend is not a multiple of the divisor, then we get a non-zero remainder. When we get a non-zero remainder while dividing a number by another, it is known as a division with remainders. Let us take an example of distributing 9 balloons to 2 children equally such that both children will have an equal number of balloons with them. Is it possible to do that without getting a leftover?

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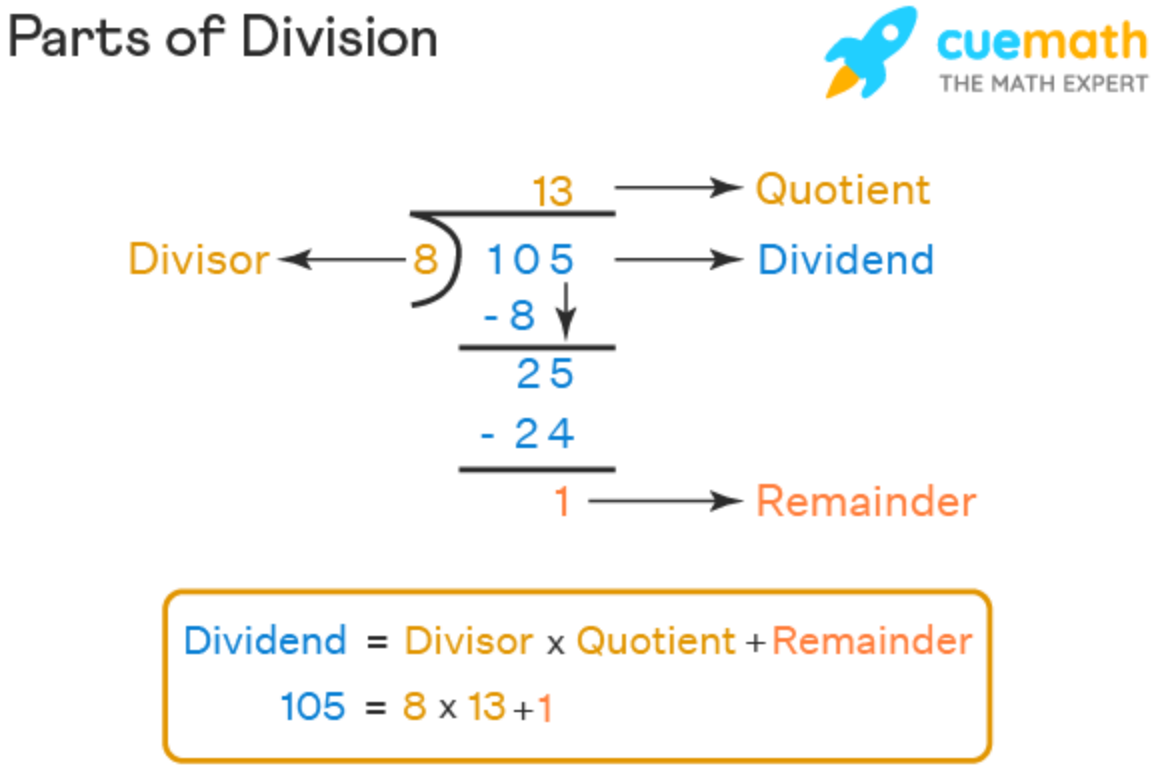

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Division Algorithm

The division algorithm is an equation that forms a relationship between all four parts of the division. In any division fact, the product of divisor and quotient added to the remainder is always equal to the value of the dividend. Thus, the general formula of division is: **Dividend = (Divisor × Quotient) + Remainder**. This is known as the division algorithm.

The above formula helps us to verify the values of quotient and remainder obtained after performing division. We can substitute the values of the quotient, remainder, and divisor in the above equation and check whether the result is the same as dividend or not. If we get the dividend, it means we have done the steps of division correctly. If not, it means there is an error in our calculations that we need to rectify. Let us take one example and see if it

satisfies the above division algorithm or not. Divide 17 by 3. 17 divided by 3 will give us 5 as the quotient and 2 as the remainder.

Dividend = (Divisor × Quotient) + Remainder

17 = (3 × 5) + 2

17 = 15 + 2

17 = 17

Hence verified.

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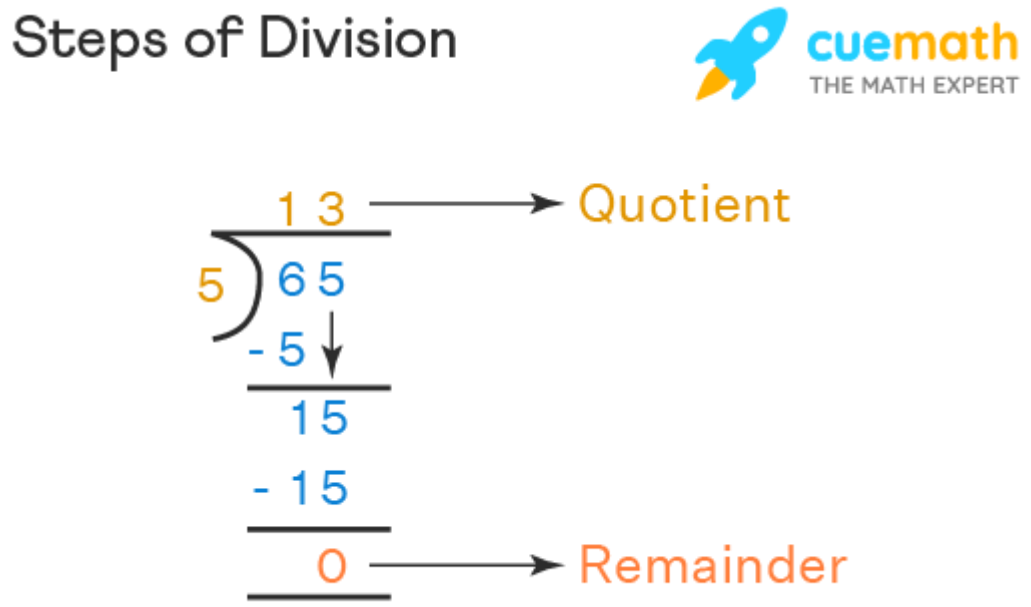

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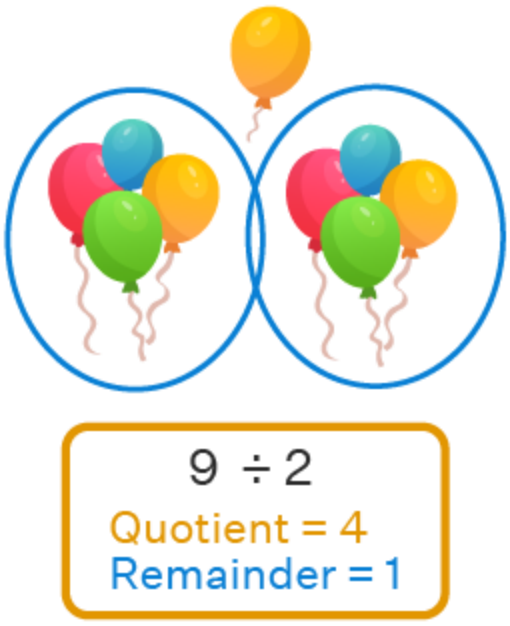
Dividing 9 by 2 will give us 4 as the quotient and 1 as the remainder. We can make 2 groups having 4 balloons in each but 1 balloon will be left. Look at the image below showing division with remainders (9 ÷ 2).

Division with Remainders



Go ahead and try out the following division questions and observe whether you get a non-zero remainder or not: 63 ÷ 9, 76 ÷ 13, 89 ÷ 8, 34 ÷ 5, and 27 ÷ 3.

Properties of Division

Now let us look at some of the properties of division operation that will help you understand this operation even better. Listed below are a few properties of division:

- **Division by 1:** Any number divided by 1 results in the number itself. In other words, if divisor = 1, then dividend = quotient.
- **Division by 0:** The value of a number divided by 0 is not defined, i.e. n/0 = not defined, where n is any number.
- **Division by itself:** If we divide a number by itself, we will always get 1 as the answer. In other words, if dividend = divisor, then quotient = 1.
- **Division of 0 by any number:** 0 divided by any number always results in 0. Some examples are 0 ÷ 4 = 0, 0 ÷ 9 = 0, 0 ÷ 5754 = 0, etc.
- **Division by 10:** If we divide a number by 10, then the digit at the ones place will always be the remainder and the remaining digits on the left will be the quotient. For example, 579 ÷ 10 = 57 R 9.

- **Division by 100:** If we divide a number by 100, then the number formed from the ones place and the tens place digits will always be the remainder and the remaining digits on the left will be the quotient. For example, 8709 ÷ 100 = 87 R 9.

below showing division with remainders (9 ÷ 2).