

Divisors of a number

If we take any two integers, for example, 12 and 3, we can do its division :

$$\begin{array}{r} 12 \quad | \quad 3 \\ \hline 0 \quad 4 \end{array}$$

Let us use tables to represent the division :

12	3
0	4

The result quotient, number 4, is an integer. We call this an exact division since the remainder of the division is 0.

Now, if we take any other two numbers, for example, 12 and 5, we can see that they can also be divided.

12	5
2	2

In this case, we obtain a reminder, number 2. Therefore, it is not an exact division.

If we try to divide different numbers, we will see that in some cases we obtain exact divisions and in other cases non exact divisions.

If the number 12 is divided by 1, 2, 3, 4, 6 or 12, exact results are obtained, with remainder 0.

$$\begin{aligned} 12 \div 1 &= 12 \\ 12 \div 2 &= 6 \\ 12 \div 3 &= 4 \\ 12 \div 4 &= 3 \\ 12 \div 6 &= 2 \\ 12 \div 12 &= 1 \end{aligned}$$

It is then said that numbers 1, 2, 3, 4, 6 and 12 are divisors of number 12.

So, we would say that one a number is a divisor of another one if the division of this second one by the first one (the divisor) result in an exact division.

The divisors of number 10 are 1, 2, 5 and 10.

$$\begin{aligned} 10 \div 1 &= 10 \\ 10 \div 2 &= 5 \\ 10 \div 5 &= 2 \\ 10 \div 10 &= 1 \end{aligned}$$

The divisors of number 27 are 1, 3, 9 and 27.

$$\begin{aligned} 27 \div 1 &= 27 \\ 27 \div 3 &= 9 \\ 27 \div 9 &= 3 \\ 27 \div 27 &= 1 \end{aligned}$$

The divisors of number 35 are 1, 5, 7 and 35.

$$\begin{aligned} 35 \div 1 &= 35 \\ 35 \div 5 &= 7 \\ 35 \div 7 &= 5 \\ 35 \div 35 &= 1 \end{aligned}$$

The divisors of number 40 are 1, 2, 4, 5, 8, 10, 20 and 40.

$$\begin{aligned} 40 \div 1 &= 40 \\ 40 \div 2 &= 20 \\ 40 \div 4 &= 10 \\ 40 \div 5 &= 8 \\ 40 \div 8 &= 5 \\ 40 \div 10 &= 4 \\ 40 \div 20 &= 2 \\ 40 \div 40 &= 1 \end{aligned}$$

As we see in these examples, the divisors of a number will always be less than this number.