In mathematics, we use signs, letters and numbers. Check this expression as an example:x+1=3There is a letter (x), two numbers (1 and 3) and two signs (+ and =).

An expression that combines letters, numbers and basic operations is called an algebraic expression.

Here, we have some examples

$$x+1$$

$$2x-3$$

$$\frac{x}{2}$$

Generally, letters are used to represent an unknown.

For example, if we call "$x$" the quantity of money that we have in the pocket (which is an unknown quantity), we can obtain different algebraic expressions. Then:

The double of the quantity of money that we have in the pocket: $2x$

The triple of the quantity of money that we have in the pocket: $3x$

The quantity of money that we have in the pocket plus one: $x+1$

The square of the quantity of money that we have in the pocket: $x^2$

Half of the quantity of money that we have in the pocket: $\frac{x}{2}$

The quantity of money that we have in the pocket changes quite often, so it does not have the same value all the time. For this reason we will name this unknown quantity a variable.

In the same way, if now we ascribe a numerical value to our variable, we can obtain a numerical expression.

Using an example, if we have $6$ one euro coins in the pocket:

The quantity of money that we have in the pocket: $x=6$

Double the quantity of money that we have in the pocket: $2x=2\cdot 6=12$

Triple the quantity of money that we have in the pocket: $3x=3\cdot 6=18$

The quantity of money that we have in the pocket plus one euro: $x+1=6+1=7$

The square of the quantity of money that we have in the pocket: $x^2=6^2=36$

Half of the quantity of money that we have in the pocket: $\frac{x}{2}=\frac{6}{2}=3$

The simplest algebraic expressions are those in which neither the sum nor the subtraction appear, so we only have one or more variables (with their respective exponents) connected by the product operation. In these cases we call them a monomial.

$$6x$$

$$4xy$$

$$x^3\frac{1}{3}$$

A monomial is divided into two parts:

1. coefficient: numerical quantity that multiplies the variables. In the previous examples: 6,4,13, respectively.

2. literal part: the variables and its exponents. In the previous examples: x,xy,x3, respectively.

Finally, we define the degree of a monomial as the sum of the exponents of its variables. In the previous examples 1,1+1=2,3, respectively.

Finally, it is necessary to remark that we can add as many variables as we need to per literal part (whenever we multiply them) raised to the power of the number of exponents that we want. This might generate big monomials, but they can be treated in the same easy way as the examples that we have already seen.

Some more examples of calculating the degree of a monomial:

$x^2\cdot y^4\cdot z^3$. The degree is $2+4+3=9$

$49h^5\cdot y^2\cdot z^4$. The degree is $5+2+4=11$

$4x^4\cdot t^3\cdot 5z$. The degree is $4+3+1=8$