Conditions

What is the difference between using a variable in an expression versus a equation?

Solution

When we use some variable in an expression, we just describe some value or result e.t.c., which is depend on this variable. For example, we want to say about how far will get a runner, if his velocity is 10 km/h, if he will run for a t hours continuously. From physics we know, that distance can be found like a product of velocity and time:

$$10t$$

This is the **expression**, which describes the distance. Now, **for each t we have various values of this expression**. Here the variable is just like parameter, which can get different values.

But, when we say about equation, we mean some dependence, when **the variable's value is unidentified, but usually clear predetermined and can be found by solving the equation**.

For example, we have a rectangular field, and want to find its length, if we know width is 10m and the area is 200 sq.m. So, the equation, from which we can find length (x) is:

$$x \cdot 10 = 200; x = \frac{200}{10} = 20m$$

Variable x can be only 20 m and no other values, because this is an equation.