

Algebra and functions

Math could be identified as the language we use to describe life, and that includes physics and chemistry and all different types of sciences.

Algebra, founded by the famous scientist

Al-Khwarizmi in the 9th century, is simply describing unknown variables that change in a way connected to other variables, either by increasing or decreasing. The equation that has the variables and that shows how they are affected by one another is called the function.

As an example, the equation of the used to describe the force is $f=m*a$, where f is the force in Newton, m is the mass in Kilograms and a is the accelartion in m/s^2 .

Another example is the equation used to describe pressure $p=f/A$ where p is pressure in N/m^2 , f is force in Newton and A is area in meter squared.

We can notice in the first equation that we can by a simple look realize that all variables move together, either by all the three growing or by them all declining. This type of connection is called a direct function.

While in the second one, it is noticed that only the f and p move together in the same direction, while the A moves in the opposite direction. This is called an inverse function connection.

Based on all above, and with again putting in mind that math is the language used to describe life, we can create our own functions to describe the variables changing in our life, and that includes in the economy, medicine, media and much more .

As example, in economics a famous equation used to Calculate the net profit of any project is

$$p=r-c,$$

Where p is the net profit, a is the total revenue and b the total cost. Note here that we used r and c to describe the revenue and the cost. However, there is no rule that tells us that we

must stick to specific letters or symbols to describe specific variables. Thus, all the equations above could have the same meaning but with different letters or symbols.

Finally, it is incredibly helpful to use functions to describe our daily life.

As an example, if a family have a constant income and a stable cost of living per month, an equation could be written to calculate their savings in a year,

where $s = (i - e) * 12$, where s is the total savings in a year, i is the income per month and e is the spending per month.