

Simultaneous equations are used to calculate all sorts of things in everyday life, like how to pick the best phone plan based on minutes used per month.

One way of solving simultaneous equations is the elimination method.

Here are two equations:

Four X plus five Y equals six and two X subtract Y equals ten.

What are the values of X and Y?

Begin by creating like values to remove either X or Y.

In this case, create four X in both equations by multiplying the bottom equation by two.

Two times two X is four X,

Two times negative Y is negative two Y,

Two times ten is 20.

Four X can now be easily eliminated by subtracting the bottom equation from the top.

Four X subtract four X is zero, Five y subtract negative two y is plus seven y

Six subtract 20 is negative 14. So seven Y equals negative 14.

Divide both sides by seven to isolate Y:

So, Y equals negative fourteen divided by seven, which means Y equals negative two.

To find x, substitute the correct Y value in one of the original equations.

For example, the bottom one.

Two X subtract Y equals ten, becomes two X subtract negative two equals ten.

So, two X plus two equals ten.

Subtract two from both sides and if two X equals eight, then X equals four.

These X and Y values give us the point of intersection of the two lines, at four, negative two.