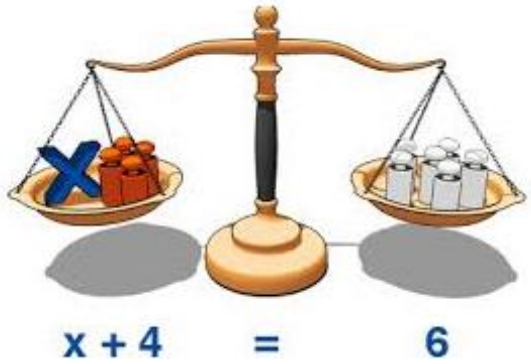
Algebra 2 – Solving Equations – Knowledge Organiser

Objective
Solve a variety of equations using diagrams
Solve a variety of equations using the balance method
Work with equations in context
Solve simultaneous equations



Key Facts

Solving means finding the value of an unknown in an equation.

We can solve equations algebraically with a variety of different methods.

Eg, find x using the balance method:

$4(x + 3) = 20$

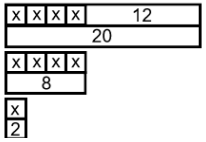
$4x + 12 = 20$

$-12 \quad -12$

$\frac{4x}{4} = \frac{8}{4}$

$x = 2$

Eg, find x using a bar modelling method

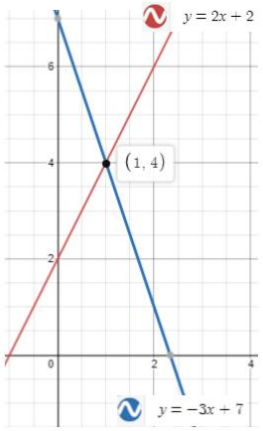


An Introduction to Simultaneous Equations

Equations in x and y relate to the x and y axes and can therefore be drawn as graphs. If two graphs are drawn on the same grid, the coordinate of where the graphs meet is the solution to the simultaneous equations.

1) $y = 2x + 2$
2) $y = -3x + 7$

These graphs meet at (1,4) so the solution to this pair of equations is x = 1 and y = 4.



simultaneous

/ ˌsɪm(ə)lˈteɪnɪəs/

adjective

occurring, operating, or done at the same time.

Key Concept Check

Kenny thinks if 6x = 3 then x = 2. Do you agree with Kenny? Explain

If an equation is solved using two different methods, you will get two different answers – is this true or false?

Two parallel graphs are drawn. If the two equations are solved simultaneously, are there any solutions?

Key words used in this unit:

Solve – to find the value of an unknown in an equation

Expand – remove brackets by multiplying terms

Balance method – a method to solve equations by doing the same thing to both sides

Bar modelling – a pictorial method for solving equations

Simultaneous equations – a pair of equations with two unknowns that can be solved together