Knowledge Organiser

Year 6	Algebra

The word "Algebra" comes from the Arabic word "al jabr," which translates to "reunion of broken parts." We use algebra all the time, even if we do not know it. It is used when cooking, calculating cost and time and in some jobs, such as design and computer programming. Being able to understand algebra will help us to write equations to solve problems.

Builds from Year 5:
No algebra unit in Year 5 however, you have learnt how to solve missing number problems since Key Stage 1.

This year:
Find rules
Expressing missing number problems algebraically.
Satisfy equations

Leads to Key Stage 3:
Use and interpret algebraic notation.
Substitute numerical values into formulae and expressions

Forming Expressions

An **expression** is a group of numbers, letters and operation symbols.

$a + 14$ — Add 14 to a.

$b - 20$ — Subtract 20 from b.

$4c$ — Multiply c by 4.

$d + 12$ — 12 more than d.

$3e - 5$ — Multiply 3 by e then subtract 5.

$2(f + 12)$ — Add 12 to find f and then multiply by 2.

Forming Equations

An **equation** is a number statement with a equal sign (=). Expressions on either side of the equal sign are of equal value.

$a + 14 = 20$

$b - 20 = 15$

$4c = 28$
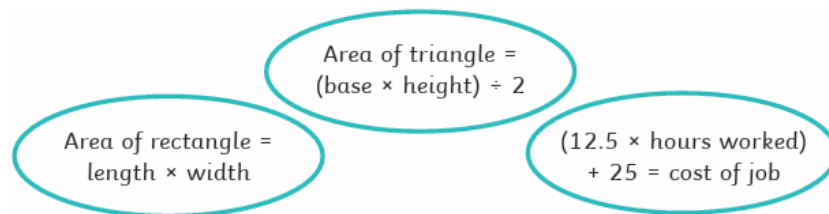
$d + 12 = 30$

$3e - 5 = 10$

$2(f + 12) = 44$

Formula

A **formula** is a special type of equation that shows the relationship between different substituted variables.

Area of triangle = (base × height) ÷ 2

Area of rectangle = length × width

(12.5 × hours worked) + 25 = cost of job

Pairs of Unknowns

In an equation with two unknown numbers, there may be several possible values for the unknowns that will balance the equation.

$ab = 18$

a	b
1	18
2	9
3	6
6	3
9	2
18	1

$2a + b = 10$

a	b
2	6
3	4
4	2
5	0

Key Vocabulary

rule   expression   equation   formula   formulae   substitution   variable   unknown