

# Year 6 Algebra Knowledge Organiser

## Lesson sequence:

- Learning focus: To use two-step function machines
- Learning focus: To substitute values
- Learning focus: To use formulae
- Learning focus: To form expressions
- Learning focus: To solve equations
- Learning focus: To find pairs of values
- Learning focus: To solve problems with two unknowns.

Vocabulary revision  
(vocabulary I have been taught before)

Balance  
Equals  
Values  
Inverse

## New vocabulary

- Equation
- Formula
- Substitution
- Expressions
- Unknowns

$$a + 14 = 20$$

$$b - 20 = 15$$

$$4c = 28$$

$$d + 12 = 30$$

$$3e - 5 = 10$$

$$2(f + 12) = 44$$

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

## Sticky Learning

### New knowledge

- To know that equations are balanced
- To know the basic rules and conventions of algebra e.g.  $5t = 5$  times  $t$
- To know that symbols and letters represent variables and unknowns

### New Skills

- To express missing number problems algebraically
- To find pairs of numbers that satisfy number sentences involving two unknowns
- To enumerate all possibilities of combinations of two variables
- To use simple formulae
- To recognise when it is possible to use formulae for area and volume of shapes
- To generate and describe linear number sequences

## Form expressions

For unknown variables, a letter is normally used in its place


More than – ADD

Less than/ difference – SUBTRACT

$$\begin{array}{l} \text{e.g. 4 more than } t \longrightarrow t + 4 \\ \text{8 less than } k \longrightarrow k - 8 \end{array}$$

Only similar terms can be grouped together

e.g. Find the perimeter of this shape  
(Perimeter = length around outside of shape)



$$t + 2t + 1 + t + 2t + 1 \longrightarrow 6t + 2$$

## Rules of algebra

- $a + b$  means the value of  $a$  added to the value of  $b$
- $c - d$  means take away the value of  $d$  from the value of  $c$
- $3x$  means 3 times the value of  $x$   
 $3x = 3 \times x$
- $pq$  means  $p \times q$
- $e/m$  means  $e \div m$

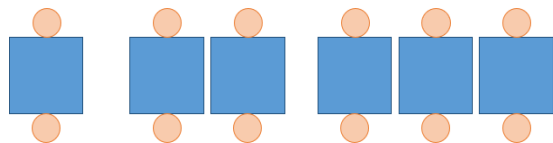
In an equation with two unknown numbers, there may be several possible values for the unknowns that will balance the equation.

$$ab = 18$$

$$2a + b = 10$$

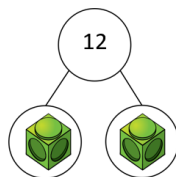
a	b
1	18
2	9
3	6
6	3
9	2
18	1

a	b
2	6
3	4
4	2
5	0



Number of squares	1	2	3	4	80
Number of circles	2	4	6	8	

## Pictorial representations



$$x + x = 12$$

19			
a	a	a	4

