

Key concepts and questions

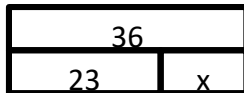
What can algebra be used for?

Algebra can be used to help find missing lengths in a shape, find missing numbers, find missing angles and coordinates.

How can an equation be represented visually?

- In algebra, using the inverse often helps to solve an equation, bar models can help visualise this.

$$23 + x = 36$$



- The inverse is $36 - 23 = 13$ so $x = 13$

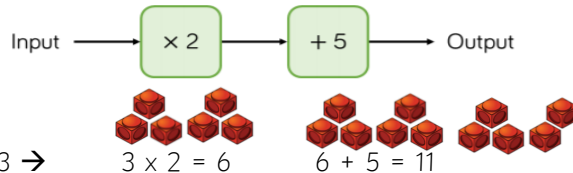
What does it mean when a number is next to a letter?

For example, $5n$. This means $5 \times$ the number represented by n .

Representations

Function machines help to break down the steps in an equation.

This one shows $2n + 5$



Concrete resources can be used to represent terms.

Words	Concrete	Algebra
I think of a number		x
Add 3		$x + 3$
My answer is 5	 = 	$x + 3 = 5$

Key Vocabulary

Sequence	A list of numbers with a pattern
Rule	Mathematically explains the sequence's pattern
Term	Each number in a sequence
Expression	A group of numbers, letters and operation symbols e.g. $2a + 4$
Equation	An expression with an equals sign e.g. $2a + 4 = 16$
Formula	A mathematical rule e.g. area of a rectangle = base $\times$ height
Substitute	When you change letters for numbers in an equation
Inverse	$\times$ and $\div$ are the inverse of each other and $+$ and $-$
Solution	Possible values that can make the equation correct
Enumerate	Find all the possible solutions for an equation

Making connections

Intervals

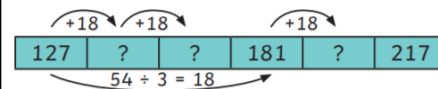
Finding the term to term rule for a linear sequence develops on finding intervals on a scale.

Week	1	2	3
Money left (£)	46	42	38

Ben starts with £50, each week he spends £4.

After n weeks he has $£50 - n \times 4$

Missing terms can also be found like missing intervals on a scale.



Known facts

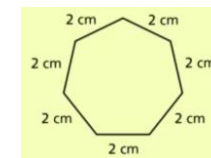
Use known facts to find all possible solutions. This is called enumerating possibilities.

$2a + b = 10$	
a	b
2	6
3	4
4	2
5	0

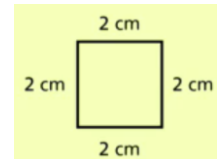
Shapes

In regular shapes, all side lengths are equal. So, perimeter of a regular polygon (P) = side length (L) $\times$ number of sides (S)

$P = LS$



$$P = 2\text{cm} \times 7 = 14\text{cm}$$



$$P = 2\text{cm} \times 4 = 8\text{cm}$$