
S1 Workshop
St Ninian's Maths Department
Welcome!

Period Starter

★ Every maths lesson begins with a period starter

1. 123 + 149

2. 453 - 164

3. 26 x 8

4. 324 ÷ 4


A quick video to set the scene . . .
click here

Finding Percentages

- Pupils are taught to calculate percentages by breaking them down into easier, more manageable parts.
- Pupils are encouraged to remember the fractional equivalent of common percentages:

$5\% = \frac{1}{20}$ $10\% = \frac{1}{10}$ $20\% = \frac{1}{5}$ $25\% = \frac{1}{4}$

$33\frac{1}{3}\% = \frac{1}{3}$ $50\% = \frac{1}{2}$ $75\% = \frac{3}{4}$

Multiples of 10

Use 10% as an easy starting point!

Example 1: Calculate 10% of 80

$$10\% \text{ of } 80 = \frac{1}{10} \text{ of } 80$$
$$= 80 \div 10$$
$$= 8$$

Example 2: Calculate 30% of 160

$$10\% \text{ of } 160 = \frac{1}{10} \text{ of } 160$$
$$= 160 \div 10$$
$$= 16$$

$$30\% \text{ of } 160 = 3 \times 16$$
$$= 48$$

Example 3: Calculate 40% of 120

YOU TRY!!

Use of Fractions in Finding Percentages

Sometimes, it is easier to use fractional equivalents to help us find percentages as follows:

Example 1: Calculate 25% of 84

$$25\% \text{ of } 84 = \frac{1}{4} \text{ of } 84$$

$$= 84 \div 4$$

$$= 21$$

This is a good method to use when the value is easily divisible by 4

Example 2: Calculate 20% of 525

YOU TRY!!

A quick way of finding 15% . . .

Calculate 15% of 260

We can calculate 15% by breaking it down into 10% and 5%

$$10\% \text{ of } 260 = \frac{1}{10} \text{ of } 260$$
$$= 260 \div 10$$
$$= 26$$

$$5\% \text{ of } 260 = \frac{1}{2} \text{ of } 26$$
$$= 26 \div 2$$
$$= 13$$

NOTE: 5% is half of 10%

So, 15% of 260 = 26 + 13
= 39

Finding 17·5%

★ Popular in some texts due to previous TAX rates

Calculate 17·5% of 480

17·5%
= 10% + 5% + 2·5%

10% of 480 = $\frac{1}{10}$ of 480

= 480 ÷ 10

= 48

5% of 480 = $\frac{1}{2}$ of 48

= 48 ÷ 2

= 24

2·5% of 480 = $\frac{1}{2}$ of 24

= 24 ÷ 2

= 12

So, 17.5% of 480 = 48 + 24 + 12

= 84

Calculate 17·5% of 360

YOU TRY!!

17·5%
= 10% + 5% + 2·5%

Other Percentages

Pupils can "break percentages down" into smaller chunks to make it easier for them. There are a number of possible options!

Example: Calculate 35% of 120

Method 1 **Find 10% and multiply it by 3 to find 30%. Find half of 10% to get 5% and then add it to the 30%.**

Method 2 **Find 1% by dividing by 100 and then multiply that by 35.**

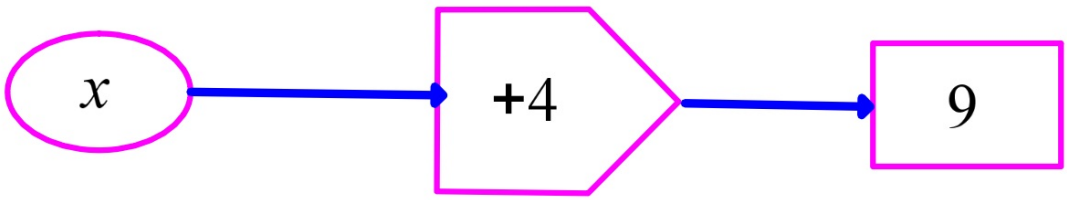
Method 3 **Find 10% and 25% and then add them together.**

Algebra

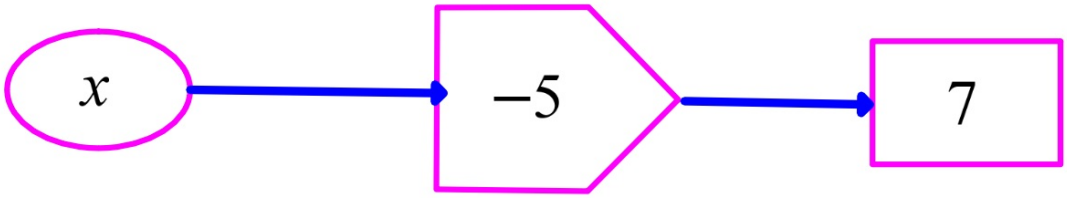
We start with the idea of a letter being an "unknown value".

Function Machines

e.g.



$x = 5$



$x = 12$

Why do we need a consistent method?

$2x + 7 = 15$

$2x + 7 - 7 = 15 - 7$

$2x = 8$

$2x \div 2 = 8 \div 2$

$x = 4$

$2x + 7 = 15$

$2x = 15 - 7$

$2x = 8$

$x = 4 \div 2$

$x = 4$

$2x + 7 = 15$

(-7) (-7)

$2x = 8$

$(\div 2)$ $(\div 2)$

$x = 4$

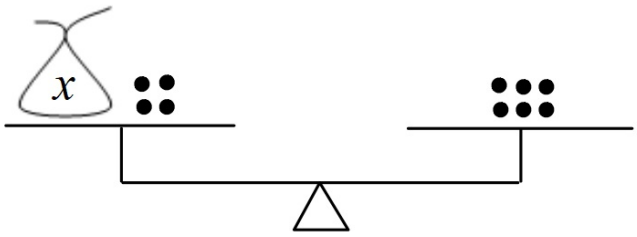
	Method
$2x + 7 = 15$	-7
$2x = 8$	$\div 2$
$x = 4$	

There are a number of ways in which we can solve equations.
We need to take a standardised approach across all schools and classes in the Cluster.
This will help eliminate difficulties when changing teachers and will make the transition to Secondary smoother and easier.

Solving Linear Equations

Example 1

Write down an equation that represents the picture on the scales, then solve it.



We start the topic by using scales to reinforce the idea of balance and doing the same to both sides

Examples

How would you leave x on it's own?
BALANCE!!

$x + 3 = 5$ | - 3 from both sides

$x = 2$

$k - 2 = 6$ | + 2 to both sides

$k = 8$

$y + 5 = 8$ |

YOU TRY!!

Examples

How would you leave x on it's own?
BALANCE!!

$3p = 9$ | ÷ 3 on both sides

$p = 3$

$7g = 21$ | ÷ 7 on both sides

$g = 3$

$6f = 18$ |

YOU TRY!!

Examples

$2x + 1 = 9$ | - 1

$2x = 8$ | ÷ 2

$x = 4$

"I'm thinking of a number.
If I multiply it by 2 and add 1 I get 9
What number was I thinking of?"

- Think of working backwards!!

$5w - 2 = 8$ | + 2

$5w = 10$ | ÷ 5

$w = 2$

$3g + 2 = 11$ |

YOU TRY!!

Trickier Examples

Letters on both sides
Add/subtract the smallest variable!!!

$2x - 6 = x$ | **- x from both sides**

$x - 6 = 0$ | **+ 6**

$x = 6$

$5w - 2 = 4w$ | **- 4w from both sides**

$w - 2 = 0$ | **+ 2**

$w = 2$

$3g - 4 = 2g$

YOU TRY!!

Trickier Examples

$2x - 6 = x$ | - x from both sides

x - 6 = 0 | + 6

x = 6

Letters on both sides
Add/subtract the smallest variable!!!

$5w - 2 = 4w$ | - 4w

w - 2 = 0 | + 2

w = 2

$3g - 4 = 2g$ |

YOU TRY!!

Trickier Examples

$2x + 5 = x + 10$ | - x

x + 5 = 10 | - 5

x = 5

Letters and numbers on both sides

Deal with the letters first!!

$3b - 1 = 2b + 9$ | - 2b

b - 1 = 9 | + 1

b = 10

$4m - 2 = 3m + 5$ |

YOU TRY!!

$5p + 2 = 2p + 8$ | - 2p

3p + 2 = 8 | - 2

3p = 6 | ÷ 3

p = 2