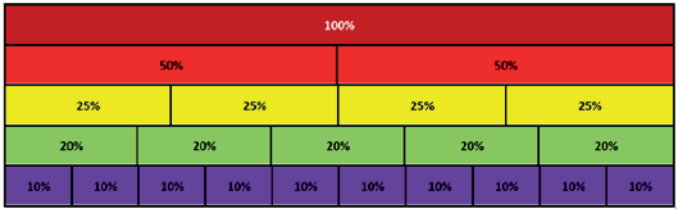
Maths Working Wall

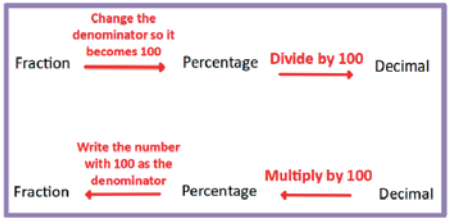
Percentages:



To find...

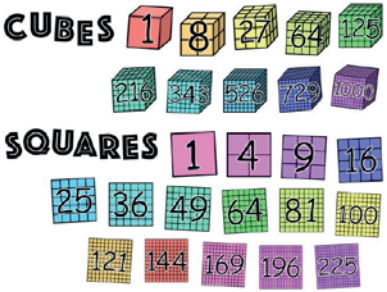
50% divide by 2
10% divide by 10
25% divide by 4
1% divide by 100

FDP:



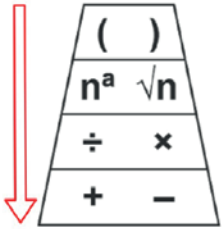
Fraction	Percentage	Decimal
$\frac{1}{2}$	50%	0.5
$\frac{1}{4}$	25%	0.25
$\frac{1}{5}$	20%	0.20
$\frac{1}{10}$	10%	0.10
$\frac{1}{100}$	1%	0.01
$\frac{3}{4}$	75%	0.75

Types of number:



PRIME	NUMBERS			
2	3	5	7	11
13	17	19	23	29
31	37	41	43	47
53	59	61	67	71
73	79	83	89	97

Order of operations



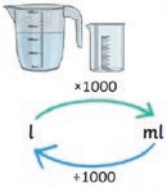
Maths Working Wall

Time:

13:00	1 p.m.	1 o'clock	
14:00	2 p.m.	2 o'clock	
15:00	3 p.m.	3 o'clock	
16:00	4 p.m.	4 o'clock	
17:00	5 p.m.	5 o'clock	
18:00	6 p.m.	6 o'clock	
19:00	7 p.m.	7 o'clock	
20:00	8 p.m.	8 o'clock	
21:00	9 p.m.	9 o'clock	
22:00	10 p.m.	10 o'clock	
23:00	11 p.m.	11 o'clock	
00:00	12 a.m.	12 o'clock	

There are 24 hours in a day.

Converting Measurements:



1000ml = 1 litre

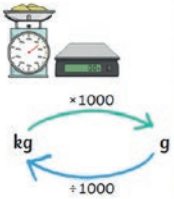
$\frac{1}{10}$l = 0.1l = 100ml

$\frac{1}{4}$l = 0.25l = 250ml

$\frac{1}{2}$l = 0.5l = 500ml

$\frac{3}{4}$l = 0.75l = 750ml

$\frac{1}{100}$l = 0.01l = 10ml



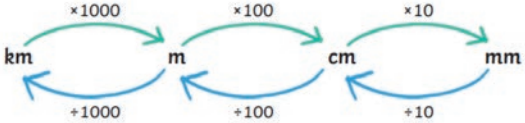
1000g = 1kg

$\frac{1}{10}$kg = 0.1kg = 100g

$\frac{1}{4}$kg = 0.25kg = 250g

$\frac{1}{2}$kg = 0.5kg = 500g

$\frac{3}{4}$kg = 0.75kg = 750g



1000 metres = 1 kilometre

100cm = 1m

10mm = 1cm

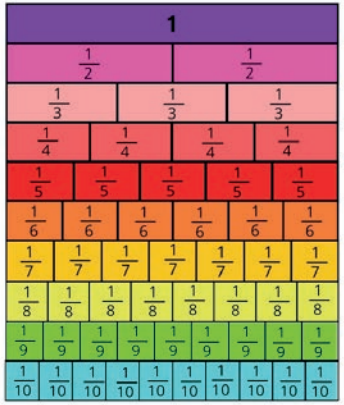
$\frac{1}{10}$km = 0.1km = 100m

$\frac{1}{4}$km = 0.25km = 250m

$\frac{1}{2}$km = 0.5km = 500m

$\frac{3}{4}$km = 0.75km = 750m

Fractions:



Factors & Multiples:

Factors of 18 : 1, 2, 3, 6, 9, 18

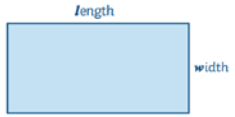
Multiples of 18 : 18, 36, 54, 72, 90, 108...

Factors are numbers that multiply to get that number

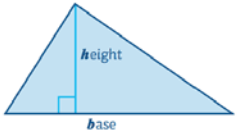
Multiples are numbers in that times table

Maths Working Wall

Shape

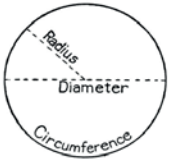


$$Area = length \times width$$



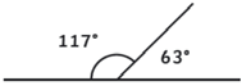
$$Area = \frac{base \times height}{2}$$

$$Area = base \times height$$

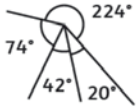


$$Circumference = \pi \times D$$

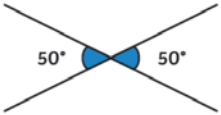
Angles

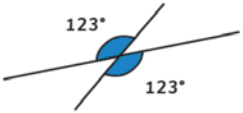


Angles on a straight line always total 180°.

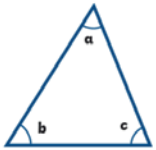


Angles around a point always total 360°.

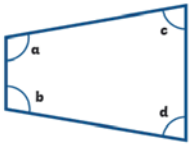




Opposite angles that share a vertex are equal.



a + b + c = 180°



a + b + c + d = 360°

Retrieval Core Maths Skills

Be Determined

Skill 1— Simple non-calculator percentages

Find 50% of 36

$50 \times 2 = 100$

$36 \div 2 = 18$

Find 25% of 36

$25 \times 4 = 100$

$36 \div 4 = 9$

Find 10% of 36

$10 \times 10 = 100$

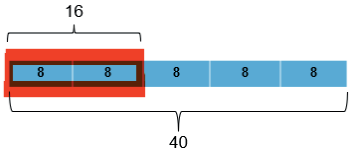
$36 \div 10 = 3.6$

Skill 2— Fraction of an amount

Find $\frac{2}{5}$ of 40

$40 \div 5 = 8$

$8 \times 2 = 16$



Skill 3— One step equations

Solve

$x + 9 = 20$

$-9 \quad -9$

$x = 11$

Solve

$x - 8 = 23$

$+8 \quad +8$

$x = 31$

Solve

$4x = 28$

$\div 4 \quad \div 4$

$x = 7$

Solve

$\frac{x}{5} = 6$

$\times 5 \quad \times 5$

$x = 30$

Skill 4— Two step equations

Solve

$2x - 8 = 32$

$+8 \quad +8$

$2x = 40$

$\div 2 \quad \div 2$

$x = 20$

Solve

$\frac{x}{3} + 7 = 12$

$-7 \quad -7$

$\frac{x}{3} = 5$

$\times 5 \quad \times 5$

$x = 20$

Skill 5— Non-calculator percentages

Find 30% of 60

10% = 6

x 3 / x 3

30% = 18

Find 5% of 80

5% = 4

÷ 2 / ÷ 2

10% = 8

Find 45% of 40

5% = 2

÷ 2 / ÷ 2

10% = 4

x 4 / x 4

40% = 16

45% = 40% + 5%

45% = 16 + 2 = 18

Retrieval Core Maths Skills

Aim High

Skill 1— Percentage Increase / Decrease

Question: Increase 64 by 15%

Method: We need to find 15% of 64, and then add it on to 64

Answer: 64 + 9.6 = 73.6

$$\begin{aligned} 100\% &= 64 \\ \div 10 \quad & \div 10 \\ 10\% &= 6.4 \\ \div 2 \quad & \div 2 \\ 5\% &= 3.2 \\ 15\% &= 9.6 \end{aligned}$$

Skill 2— Solving 1-step Equations

$$\begin{aligned} x + 5 &= 12 \\ -5 \quad & -5 \\ x &= 7 \end{aligned}$$

$$\begin{aligned} y - 6 &= 4 \\ +6 \quad & +6 \\ y &= 10 \end{aligned}$$

$$\begin{aligned} 3p &= 27 \\ \div 3 \quad & \div 3 \\ p &= 9 \end{aligned}$$

$$\begin{aligned} \frac{m}{2} &= 11 \\ \times 2 \quad & \times 2 \\ m &= 22 \end{aligned}$$

Skill 3— Solving 2-step Equations

$$\begin{aligned} 5h - 1 &= 14 \\ +1 \quad & +1 \\ 5h &= 15 \\ \div 5 \quad & \div 5 \\ h &= 3 \end{aligned}$$

$$\begin{aligned} \frac{k}{3} + 4 &= 9 \\ -4 \quad & -4 \\ \frac{k}{3} &= 5 \\ \times 3 \quad & \times 3 \\ k &= 15 \end{aligned}$$

$$\begin{aligned} \frac{j - 10}{7} &= 1 \\ \times 7 \quad & \times 7 \\ j - 10 &= 7 \\ +10 \quad & +10 \\ j &= 17 \end{aligned}$$

Skill 4— Percentage Multiplier

To change a % into a decimal, we ÷ by 100
e.g. 112% = 1.12 60% = 0.6

Question	Find	Decimal Multiplier
To increase by 8%	We find 108% (100% + 8%)	× 1.08 (108 ÷ 100)
To decrease by 30%	We find 70% (100% - 30%)	× 0.7 (70 ÷ 100)

Skill 5— Solving Equations with Variables on both sides

When there is a variable (unknown) on both sides of the equation, we need to remove the variable from one of the sides

$$\begin{aligned} 5x - 6 &= 3x + 12 \\ -3x \quad & -3x \\ 2x - 6 &= 12 \\ +6 \quad & +6 \\ 2x &= 18 \\ \div 2 \quad & \div 2 \\ x &= 9 \end{aligned}$$

Hint: remove the smaller variable e.g. we -3x from both sides here, rather than -5x

Retrieval Core Maths Skills

Be Brave

Skill 1— Percentage Multipliers

Finding a multiplier when increasing by a percentage: Add the percentage increase to 100% and divide the percentage by 100.

Finding a multiplier when decreasing by a percentage:
Subtract the percentage decrease from 100% and divide the percentage by 100.

Percentage Increase	Multiplier
50%	(100+50) ÷ 100 = 1.5
42%	(100+42) ÷ 100 = 0.42
106%	(100+106) ÷ 100 = 2.06
216%	(100+216) ÷ 100 = 3.6

Percentage Decrease	Multiplier
50%	(100-50) ÷ 100 = 0.5
42%	(100-42) ÷ 100 = 0.58
6%	(100-6) ÷ 100 = 0.94
16%	(100-16) ÷ 100 = 0.84

Skill 2— Percentage Increase and Decrease

Increase £500 by 20%

£500 = 100%

100% + 20% = 120% The new amount is represented by 120%

120% = 120 ÷ 100 = 1.2 ← multiplier

£500 x 1.2 = £600

Decrease £600 by 20%

£600 = 100%

100% - 20% = 80% The new amount is represented by 80%

80% = 80 ÷ 100 = 0.8 ← multiplier

£500 x 0.8 = £400

Skill 3—Reverse Percentages

The price of a ticket costs £30 inclusive of 12% tax.
What is the pre-tax cost of the ticket?

100% + 12% = 112% = 1.12

Original Price ? —x 1.12→ New Price £30
Original Price ? ←÷ 1.12— New Price £30

Original price
= £30 ÷ 1.12 = £26.79

Skill 4—Solving 2-Step Equations

Solve $3x + 4 = 19$

$$3x + 4 = 19$$
$$-4 \quad -4$$
$$3x = 15$$
$$\div 3 \quad \div 3$$
$$x = 5$$

Keep the balance of the equation by doing the same inverse to both sides.

Check by substituting your solution back in the equation.

Skill 5—Solving Equations with the Unknown on Both Sides

Solve $3x + 2 = 10 - 2x$

Tip: Move the smallest letter term first. This keeps the letter term positive.

$$3x + 2 = 17 - 2x$$
$$+2x \quad +2x$$
$$5x + 2 = 17$$
$$-2 \quad -2$$
$$5x = 15$$
$$\div 5 \quad \div 5$$
$$x = 3$$

Check by substituting your solution back in to the equation.