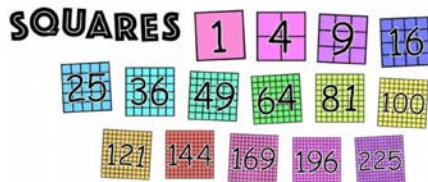


Maths Working Wall

Multiplication Square

X	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144

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

Factors & Multiples:

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

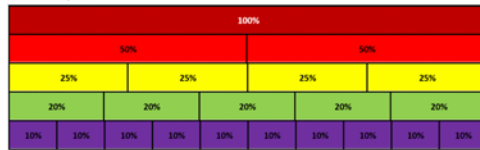
Multiples of 18 : 18, 36, 54, 72, 90...

Factors are numbers that multiply to get that number

Multiples are numbers in that times table

Maths Working Wall

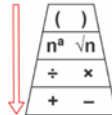
Percentages:



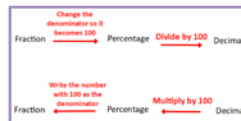
To find...

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

Order of operations



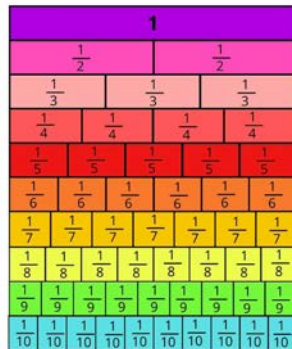
FDP:



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



Fractions:



Averages:

Mode = Most frequent piece of data

Median = Once data is ordered smallest to biggest, the median is the middle

Mean = Add all pieces of data together and divide by how many there are

Range = Difference between the biggest and smallest piece of data

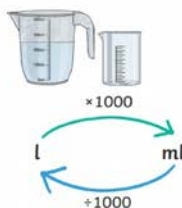
Maths Working Wall

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	



Converting Measurements:



1000ml = 1 litre

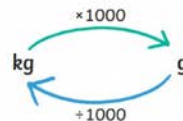
$\frac{1}{10}l = 0.1l = 100ml$

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

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

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

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



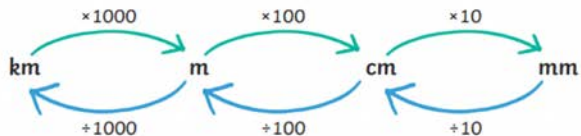
1000g = 1kg

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

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

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

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



1000 metres = 1 kilometre

100cm = 1m

10mm = 1cm

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

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

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

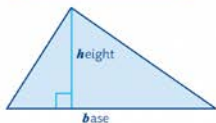
$\frac{3}{4}km = 0.75km = 750m$

Maths Working Wall

Shape



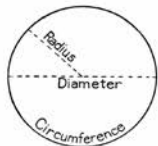
$$\text{Area} = \text{length} \times \text{width}$$



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

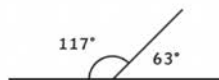


$$\text{Area} = \text{base} \times \text{height}$$

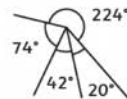


$$\text{Circumference} = \pi \times D$$

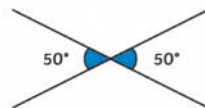
Angles



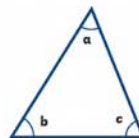
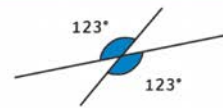
Angles on a straight line always total 180° .



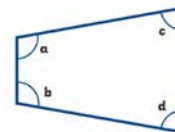
Angles around a point always total 360° .



Opposite angles that share a vertex are equal.



$$a + b + c = 180^\circ$$



$$a + b + c + d = 360^\circ$$

Retrieval Core Maths Knowledge



Skill 1—Expanding Single Brackets

Expand
 $4m(2m - 5)$
 $= 8m^2 - 20m$

$$4m \begin{array}{|c|c|} \hline 2m & -5 \\ \hline 8m^2 & -20m \\ \hline \end{array}$$

Skill 2— Collecting Like Terms

$$7t + 10s - 5t - 2s =$$

$$7t + 10s - 5t - 2s =$$

$$7t - 5t + 10s - 2s =$$

$$2t + 8s$$

Skill 3— Substitution

Evaluate $3a - 2b$, for $a = 10$ and $b = 4$

$$3a - 2b \quad (a = 10 \quad b = 4)$$

$$= 3(10) - 2(4)$$

$$= 30 - 8$$

$$= 22 \quad \checkmark$$

Skill 4— Sharing in a Ratio

Share £20 in the ratio **2:5:3**

- Find the **total number of parts**
 $2 + 5 + 3 = 10$
- Divide the **amount** by the **total number of parts**
 $£20 \div 10 = £2 = 1 \text{ part}$
- Multiply each number in the **ratio** by the value of 1 part

$2 : 5 : 3$
 $\times £2 \quad \downarrow \times £2 \quad \times £2$
 $£4 : £10 : £6$

Skill 5—Using Equivalence

4 fern plants cost £10. How much would 20 fern plants cost?

$$\begin{array}{l} 4 \text{ plants} : £10 \\ \downarrow \times 5 \\ 20 \text{ plants} : £50 \end{array}$$

Retrieval Core Maths knowledge



Aim High

Skill 1— Collecting like terms

$$3y + 2x + 4x - y = 2y + 6x$$

Like terms

Like terms

$$a^2 + a^2 + a^2 = 3a^2$$

$$3x^2 + 7xy + 5x^2 + 3xy = 8x^2 + 10xy$$

Skill 2— Expanding brackets

$$3(a+4) = 3a + 12$$

$$4(a-5) = 4a - 20$$

Expand

$$5x(x-3) = 5x^2 - 15x$$

$$5x \begin{array}{|c|c|} \hline x & -3 \\ \hline \end{array} \begin{array}{|c|c|} \hline 5x^2 & -15x \\ \hline \end{array}$$

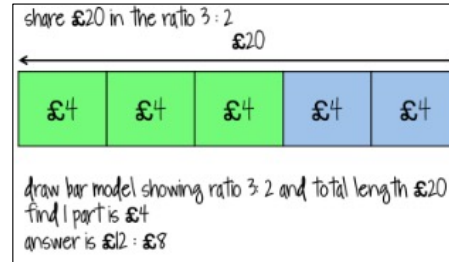
Skill 3— Factorising linear expressions

Factorising = "put back into brackets"

The highest common factor of each term goes in front of the bracket, and the rest of the factors go inside:

$$35x + 45xy = 5x(\underline{\quad} + \underline{\quad}) = 5x(7 + 9y)$$

Skill 4— Sharing in a ratio



Skill 5— Equivalence methods

10 apples cost £2.50
So 5 apples = £1.25
1 apple = 25p
3 apples = 75p
300 apples = £75
303 apples = £75.75

$$\begin{array}{c} \times 1.25 \\ \text{£1} \rightarrow \text{£1.25} \\ \div 1.25 \end{array}$$

So £2 = \$2.50
£3 = \$3.75
£20 = \$25

A car is travelling 40mph
So 40 miles = 60 **minutes** (1 hour)
20 miles = 30 minutes
10 miles = 15 minutes etc

How long will it take to go 100 miles?
40 miles = 60 minutes
20 miles = 30 minutes
100 miles = 150 minutes
150 minutes = **2 hours 30 minutes**

Retrieval Core Maths knowledge



Skill 1—Collecting Like Terms.

$$3a + 4b - a + 2b - 6$$

$$3a - a \quad +4b + 2b \quad -6$$

$$2a + 6b - 6$$

$$7x^2 - 4x - x^2 + 3x$$

$$7x^2 - x^2 \quad -4x + 3x$$

$$6x^2 - x$$

Skill 2—Expanding Brackets. Grid Method.

Expanding a single term over a bracket

Expand & Simplify:

$$4(3x + 6)$$

x	3x	+ 6
4	12x	+ 24

$$12x + 24$$

Expanding double brackets

Expand & Simplify:

$$(x + 2)(x + 4)$$

x	x	+ 2
x	x ²	+ 2x
+ 4	+ 4x	+ 8

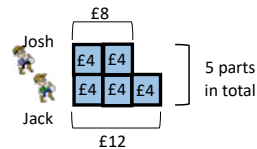
$$x^2 + 2x + 4x + 8$$

$$x^2 + 6x + 8$$

Skill 3—Dividing into a Ratio

Josh and Jack the bandits stole £20 from the bank!
They divided it in the ratio 2 : 3
How much did they each get?

Draw a **Bar Model** to calculate £20 ÷ 5 =
how much **one part** is worth. £4 per part



Josh gets £8. Jack gets £12.
How can we check our answer?

Skill 4—Factorising

Factorise:

$$6x + 4$$

1) Find the HCF of the terms. 2) Divide each term by the HCF.

$$\frac{6x}{2} = 3x \quad \frac{+4}{2} = +2$$

$$2(3x + 2)$$

Check by expanding the bracket.

Factorise:

$$x^2 - 7x + 10$$

Write down the factor pairs for the number term:
1 x 10, 2 x 5

Find the factor pairs which sum to the x-coefficient: 2 x 5

x	x	-2
x		
-5		

$$(x - 2)(x - 5)$$

Double check by expanding the brackets.

Skill 5—Equivalence

12 sweets cost £5.40. How much do 5 cost?

$$\begin{aligned} \div 12 & \left\{ \begin{array}{l} 12 \text{ sweets : } £5.40 \\ 1 \text{ sweet : } £0.45 \end{array} \right. \div 12 \\ \times 5 & \left\{ \begin{array}{l} 5 \text{ sweets : } £2.25 \end{array} \right. \times 5 \end{aligned}$$

12 sweets cost £5.40. How much do 5 cost?

$$\begin{aligned} \times \frac{5}{12} & \left\{ \begin{array}{l} 12 \text{ sweets : } £5.40 \\ 5 \text{ sweets : } £2.25 \end{array} \right. \times \frac{5}{12} \end{aligned}$$