Prime Numbers

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Only divisible by itself and 1.

Remember:
1 is not a prime number

Square Numbers

×	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	110	110	121	132
12	12	24	36	48	60	72	84	96	120	120	132	144

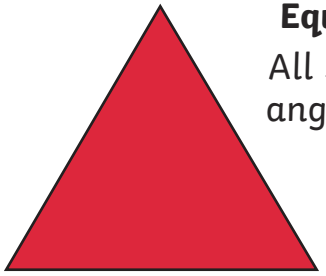
A number multiplied by itself produces a square number.

The opposite of a square number is a square root.
√

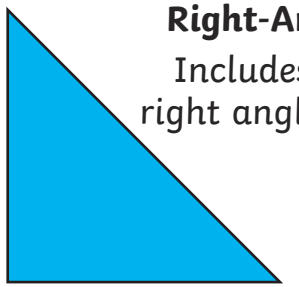
Mean, Mode and Median

Mean	The average when all values are added and then divided by the number of values.
Mode	The most popular number in a set of data.
Median	The middle value of a set of data when they are written in size order.
Range	The difference between the highest and lowest value of a set of data.

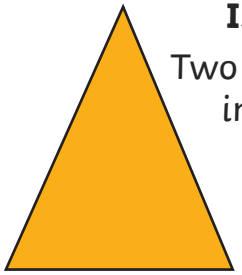
Triangles



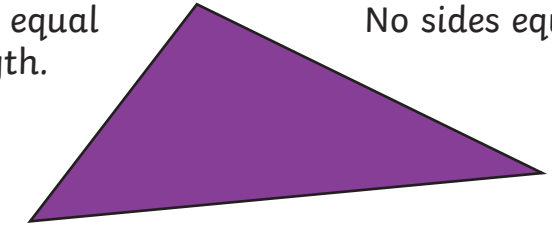
Equilateral
All sides and angles equal.



Right-Angled
Includes one right angle (90°)



Isosceles
Two sides equal in length.



Scalene
No sides equal.

12 and 24 Hour Clock

12 Hour Clock	24 Hour Clock
12 midnight	00:00
1am	01:00
2am	02:00
3am	03:00
4am	04:00
5am	05:00
6am	06:00
7am	07:00
8am	08:00
9am	09:00
10am	10:00
11am	11:00

12 Hour Clock	24 Hour Clock
12pm	12:00
1pm	13:00
2pm	14:00
3pm	15:00
4pm	16:00
5pm	17:00
6pm	18:00
7pm	19:00
8pm	20:00
9pm	21:00
10pm	22:00
11pm	23:00

Metric Measurements

Distance

Unit	Symbol	Equivalent
Kilometre	km	= 1000m
Metre	m	= 100cm
Centimetre	cm	= 10mm
Millimetre	mm	

Volume

Unit	Symbol	Equivalent
Kilolitre	kl	= 1000l
Litre	l	= 100cl
Centilitre	cl	= 10ml
Millilitre	ml	

Weight

Unit	Symbol	Equivalent
Tonne	t	= 1000kg
Kilogram	kg	= 1000g
Gram	g	= 1000mg
Milligram	mg	

Time

Unit	Symbol	Equivalent
Hour	H/h	= 60mins
Minute	mins	= 60secs
Seconds	secs	= 1000ms

Imperial Measurements

Distance

Unit	Symbol	Equivalent
Mile	M	= 1760yds
Yard	yd	= 3’
Foot	ft or ’	= 12”
Inch	in or ”	

Volume

Unit	Symbol	Equivalent
Gallon	gal	= 8pts
Quart	qt	= 2pts
Pint	pt	= 16floz
Fluid Ounce	floz	

Weight

Unit	Symbol	Equivalent
Ton	t	= 160st
Stone	st	= 14lbs
Pound	lb	= 16oz
Ounce	oz	

Area

Unit	Symbol	Equivalent
Square Mile	$mile^2$	=640 acres
Acre	acre	= $4840yd^2$
Square Yard	yd^2	= $9ft^2$
Square Foot	ft^2	

Converting Units

‘Kilo’ means thousand and ‘milli’ means a thousandth

Metric Distance

From	To	Method
cm	m	÷ 100
cm	mm	× 10
m	km	÷ 1000
km	m	× 1000

Metric Volume

From	To	Method
l	ml	× 1000
ml	l	÷ 1000

Metric Weight

From	To	Method
kg	g	× 1000
g	kg	÷ 1000

Imperial and Metric

From	To	Method
miles	km	× 1.6
km	miles	÷ 1.6

Column Calculations

Commonly used for addition and subtraction.

Some tips to remember:

- Always work from right to left.
- Don't forget to add on any numbers you carry over to the next column.
- For subtractions the largest number is always on the top and it is always 'top take away bottom' as you work through.

Shape Prefixes

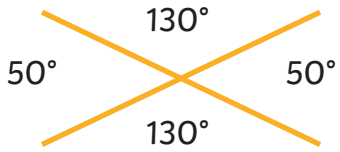
Bi = 2	Hept = 7
Tri = 3	Oct = 8
Quad = 4	Non = 9
Pent = 5	Dec = 10
Hex = 6	Hemi = half

3D Shape Families

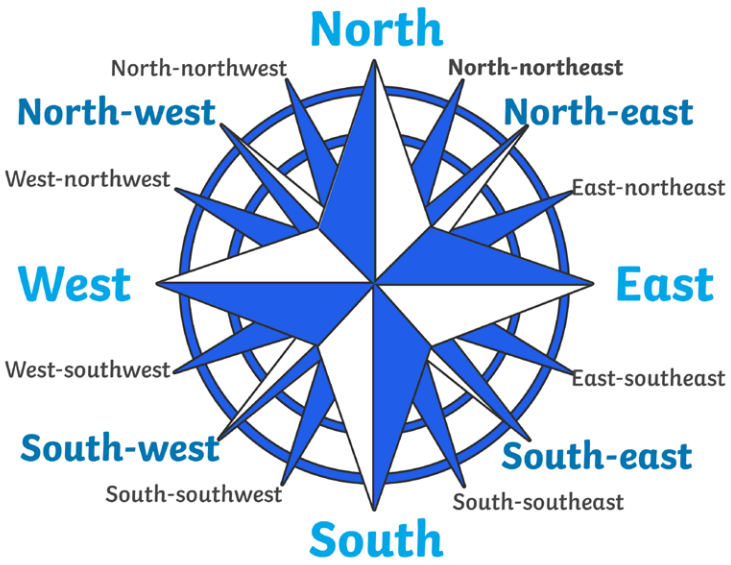
- **Quadrilaterals** all have 4 sides (square, rectangle, rhombus, parallelogram, trapezium).
- **Prisms** are like an elongated shape or a cylinder with edges, such as a hexagonal prism with hexagons on each end.
- **Pyramids** all have a base with the sides meeting at one point, such as a square-based pyramid or an octagonal-based pyramid.
- **Polygons** are 2D shapes that usually end in '-agon', such as octagon or nonagon.
- **Polyhedrons** are 3D shapes that usually end in '-hedron', such as octahedron or dodecahedron.

Angles

- Inside angles of a triangle = 180°
- Inside angles of a quadrilateral = 360°
- A straight line = 180°
- A full circle = 360°
- Opposite angles on crossing lines are equal, for example:



Compass Points



Multiplication Shortcuts

× 20 = double it then × 10

× 30 = × 3 then × 10

× 4 = double, then double again

× 8 = double, double and double again.

× 15 = × 10, half it, then add both together.

× 50 = × 100, then half it.

× and ÷ by 10, 100 or 1000

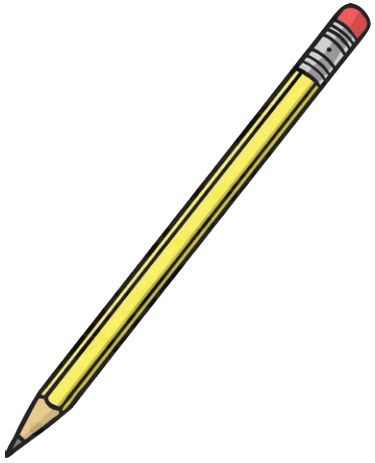
× move all digits to the left
÷ move all digits to the right

×10 move all digits	÷ 10 move all digits
1 place to the left	1 place to the right
× 100 move all digits	÷ 100 move all digits
2 places to the left	2 places to the right
× 1000 move all digits	÷ 1000 move all digits
3 places to the left	3 places to the right

Coordinates

The x axis goes across/horizontal
The y axis goes up/vertical

- Coordinates are written (x,y)
- The first number moves horizontally
- The second number moves vertically
- A useful tip is "along the corridor and up the stairs" (although the stairs may be down if you have negative numbers!).



What is a Fraction?

$\frac{3}{4}$

The top number is called the numerator and tells you how many pieces you have out of the possible pieces.

The bottom number is called the denominator and tells you how many equal pieces something is cut into.

You use fractions all the time without thinking, like when you get $\frac{8}{10}$ on a spelling test. There are 10 equal marks available and you've got 8 of them.

Comparing Fractions

Sometimes you will need to compare or calculate using fractions. The easiest way to compare them is to change them to a **common denominator** (same bottom number).

Do this by multiplying or dividing with the rule:
do the same to the top as you do to the bottom.

So: $\frac{5}{12}$, $\frac{5}{6}$ and $\frac{3}{4}$ can all be made into 12ths by multiplying the 5 and the 6 by 2 and also the 3 and the 4 by 3 giving:
$\frac{5}{12}$, $\frac{10}{12}$, $\frac{9}{12}$

Finding Quick Percentages

Find 1% = ÷ 100

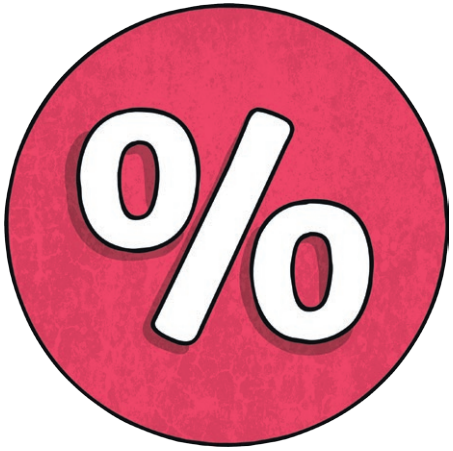
Find 10% = ÷ 10

Find 20% = ÷ 5

50% = ÷ 2

25% = ÷ 4

75% = ÷ 4, then × 3



Finding Any Percentage

Once you know that to find 1% is the same as dividing by 100, you can then multiply that by whatever percent you want!

For example 17% is 17 lots of 1%

So you will need to ÷ 100, then × 17.

There are quick ways of finding some percentage such as 10% = ÷ 10, but even this long method would work the answer out correctly.

Adding Fractions

1. Change them to a common denominator.
2. Add the top numbers only and keep the same denominator.

Example: $\frac{3}{4} + \frac{4}{6}$

1. Change both fractions to 12ths
   $= \frac{9}{12} + \frac{8}{12}$
2. Add the top numbers only and keep the bottom number:
   9 + 8 = 17

So the answer is $\frac{17}{12}$ or simplified to $1\ \frac{5}{12}$

Subtracting Fractions

1. Change them to a common denominator.
2. Subtract the top numbers only and keep the same denominator.

Example: $\frac{3}{4} + \frac{4}{6}$

1. Change both fractions to 12ths
   $= \frac{9}{12} + \frac{8}{12}$
2. Subtract the top numbers only and keep the bottom number:
   9 - 8 = 1

So the answer is $\frac{1}{12}$

Multiplying Fractions

1. Multiply the two top numbers together to get a new top number.
2. Multiply the two bottom numbers together to get a new bottom number

Example: $\frac{3}{5} + \frac{4}{6}$

1. Multiply the two top numbers together = 3 × 4 = 12
2. Multiply the two bottom numbers together = 5 × 6 = 30

So the answer is $\frac{12}{30}$
Which you can then simplify to $\frac{6}{15}$, $\frac{4}{10}$ or $\frac{2}{5}$

Dividing Fractions

1. Flip the second fraction over
2. Multiply the two top numbers together to get a new top number.
3. Multiply the two bottom numbers together to get a new bottom number.

Example: $\frac{3}{5} \div \frac{2}{7}$

1. Flip the second fraction over so it becomes $\frac{3}{5} \times \frac{7}{2}$
2. Multiply the two top numbers together 3 × 7 = 21
3. Multiply the two bottom numbers together 5 × 2 = 10

So the answer is $\frac{21}{10}$
Which you can then simplify to $2\ \frac{1}{10}$

Roman Numerals

I = 1
II = 2
III = 3
IV = 4
V = 5
VI = 6
VII = 7
VIII = 8
IX = 9
X = 10
L = 50
D = 500
M = 1000
$\overline{M}$ = 1 million

A line over any letter makes it 1000 times bigger.

Decimals

A good tip with decimals is to think of them as money.

For example: 1.2 + 3.4

could be thought of as: £1.20 + £3.40 giving an answer of £4.60 and it seems much easier.

Just don't forget to make it back into a plain decimal in the end.

So £4.60 would be 4.6

Times Table Square

×	2	3	4	5	6	7	8	9	10
2	4	6	8	10	12	14	16	18	20
3	6	9	12	15	18	21	24	27	30
4	8	12	16	20	24	28	32	36	40
5	10	15	20	25	30	35	40	45	50
6	12	18	24	30	36	42	48	54	60
7	14	21	28	35	42	49	56	63	70
8	16	24	32	40	48	56	64	72	80
9	18	27	36	45	54	63	72	81	90
10	20	30	40	50	60	70	80	90	100

Fractions, Decimals and %

Fraction	Decimal	Percentage %
$\frac{1}{100}$	0.01	1%
$\frac{1}{10}$	0.1	10%
$\frac{1}{5}$	0.2	20%
$\frac{1}{2}$	0.5	50%
$\frac{1}{4}$	0.25	25%
$\frac{3}{4}$	0.75	75%