Column Method

	4	5	8	6	4
+	2	3	4	9	7
	6	9	3	6	1
		1	1	1	

Starting with the ones, add each column in turn. Regroup tens, hundreds, thousands, ten thousands as required.

	3	5	^{6}7	^{13}4	^{1}2
-		3	4	7	6
	3	2	2	6	6

Starting with the ones, subtract each column in turn. Exchange tens, hundreds, thousands and/or ten thousands as required.

Multiplication

1	$\not2$	$\not2$	
		1	5	4
×			2	6
		9	2	4
	3	0	8	0
	4	0	0	4
			1	1

Start with the ones.
154 × 6 = 924
154 × 20 = 3080
3080 + 924 = 4004

Short Division

Start from the left.

4 4 0 5
12 5 ^{5}2 ^{4}8 6 ^{6}0

5 ÷ 12 = 0 r5
52 ÷ 12 = 4 r4
48 ÷ 12 = 4
6 ÷ 12 = 0 r6

Long Division

			1	2	0	r	3
14	1	6	8	3			
	1	4	0	0			
		2	8	3			
		2	8	0			
				3			

Fractions

Adding and subtracting fractions:
When the denominator is the same, calculate using the numerators
e.g. 3/5 + 4/5 = 7/5

Multiplying fractions together:
Multiply the numerators together and the denominators together
e.g. 2/3 × 4/5 = 8/15

Multiplying a fraction by a whole number:
Multiply the numerator by the whole number
e.g. 2/3 × 5 = 10/3

Dividing fractions by a whole number:
Multiply the denominator by the dividing number
e.g. 2/3 ÷ 5 = 2/15

Multiplication and division vocabulary

Term	Definition	Example
factor	a number that divides exactly into another number	factors of 12 = 1, 2, 3, 4, 6, 12
common factor	factors of two numbers that are the same	common factors of 8 and 12 = 1, 2, 4
prime number	a number with only 2 factors: 1 and itself	2, 3, 5, 7, 11, 13, 17, 19...
composite number	a number with more than two factors	12 (it has 6 factors)
prime factor	a factor that is prime	prime factors of 12 = 2, 3
multiple	a number in another number's times table	multiples of 9 = 9, 18, 27, 36...
common multiple	multiples of two numbers that are the same	common multiples of 4 and 6 = 12, 24...
square numbers	the result when a number has been multiplied by itself	25 (5^2 = 5x5) 49 (7^2 = 7x7)
cube numbers	the result when a number has been multiplied by itself 3 times	8 (2^3 = 2x2x2) 27 (3^3 = 3x3x3)

Roman numerals

1	I	100	C
5	V	500	D
10	X	1000	M
50	L		

B	Brackets	10 × (4 + 2) = 10 × 6 = 60
O	Order	5 + 2^2 = 5 + 4 = 9
D	Division	10 + 6 ÷ 2 = 10 + 3 = 13
M	Multiplication	10 - 4 × 2 = 10 - 8 = 2
A	Addition	10 × 4 + 7 = 40 + 7 = 47
S	Subtraction	10 ÷ 2 - 3 = 5 - 3 = 2

Measurement conversions

Month	Days
January	31
February	28 (29 in leap year)
March	31
April	30
May	31
June	30
July	31
August	31
September	30
October	31
November	30
December	31

1 year = 365 days (≈ 52 weeks)
Leap year = 366 days

1 **centi**metre	10mm
1 metre	100cm
1 **kilo**metre	1,000 m
1 mile	1.6 km
1 kilometre	0.625 ($^5/_8$) mile
1 **kilo**gram	1,000 grams
1 litre	1,000 **milli**litres

Co-ordinates

Read co-ordinates along the x axis (horizontal) first, then the y axis (vertical). E.g. (3,-4) = go right 3, down 4.

2D shapes

Name	No. of sides
quadrilateral	4
pentagon	5
hexagon	6
heptagon	7
octagon	8
nonagon	9
decagon	10

polygon = shape with straight sides
regular = all sides/angles the same
irregular = sides/angles **not** same

Types of triangle

scalene   equilateral   isosceles

Types of quadrilateral

parallelogram   trapezium   rhombus
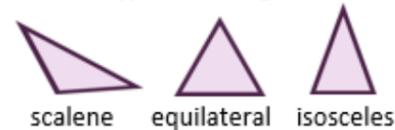
AREA

is the amount of space inside a 2D shape usually measured in cm² or m².

Area of a triangle = (base x height) ÷ 2
Area of a parallelogram = base x height
Height= perpendicular height

3D shapes

square-based pyramid   triangular-based pyramid   triangular prism

	square-based pyramid	triangular-based pyramid	triangular prism
faces (the flat sides)	5	4	5
edges	8	6	9
vertices (the points where the edges meet)	5	4	6

Volume = the amount of space a 3D shape takes up, usually measured in cm³ or m³
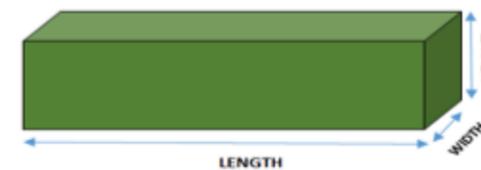
Volume of a cuboid = length x width x height

The mean

The mean is a type of average. To find the mean, add up all the numbers and divide by how many there are. E.g. the mean of 4, 5, 3, 4 is 4. (Because 4 + 5 + 3 + 4 = 16, and 16 ÷ 4 = 4)

Angles

Acute Angles 0°< angle <90°
Right Angles 90°
Obtuse 90°< angle <180°
Right angle notation
Reflex 180°< angle <360°
Straight Line 180°

Fractions, decimals & percentages

$^1/_{100}$	0.01	1%	÷ 100
$^1/_{20}$	0.05	5%	÷ 20
$^1/_{10}$	0.1	10%	÷ 10
$^1/_5$	0.2	20%	÷ 5
¼	0.25	25%	÷ 4
½	0.5	50%	÷ 2
¾	0.75	75%	÷ 4, x3
1	1	100%	÷ 1

Angles

full turn	360°
half turn	180°
right angle	90°
acute angle	< 90°
obtuse angle	> 90°
reflex angle	>180°
angles on a straight line	180°
angles inside a triangle	180°
angles inside a quadrilateral	360°

Area

Rectangle/ Square area = Base x Height

Compound Shapes

Area of A
The height of shape A is 5cm
2 x 5 = 10cm²

Area of B
4 x 5 = 20cm²

Total area = Area A + Area B = 10 + 20 = **30cm²**

Perimeter

Length around the outside of the shape

In compound shapes make sure all the lengths have measurements

Perimeter = 9cm + 8cm + 1cm + 7cm + 8cm + 1cm = 34cm

Perimeter often asks about boundaries or walls in questions
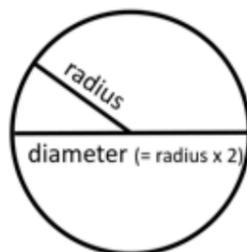
Shape vocabulary

perimeter = measure around the edge (**circumference** = perimeter of a circle)

horizontal line

vertical line
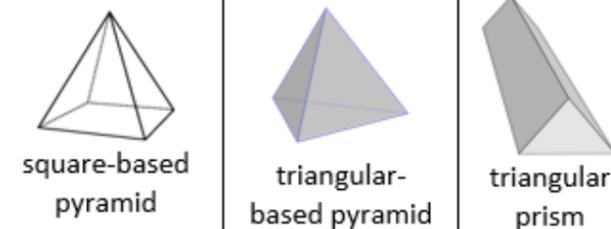
parallel lines

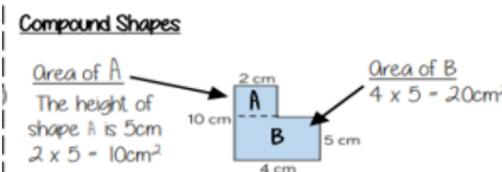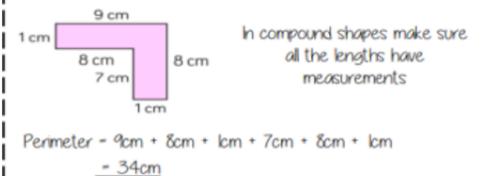perpendicular lines (at right angles)

radius

diameter (= radius x 2)