Year 9 Learn by Heart Sheet

GCSE Maths – Year 9: **LEARN THESE FACTS!** You will not be given them in the exam.

Types of number:
odd – ends in 1, 3, 5, 7, 9
even – ends in 0, 2, 4, 6, 8 (is divisible by 2)
factor – divides exactly into a number
eg 5 is a factor of 10
multiple – in the times table of a number
eg 20 is a multiple of 10
square number – can be written as a number multiplied by itself eg 9 is a square number because it can be written as 3x3. The first 7 square numbers are 1, 4, 9, 16, 25, 36, 49, ...
prime number - can only be divided by one and itself: 2, 3, 5, 7, 11, 13, 17... are prime

Metric units:
Length – use mm, cm, m, km
Area – use mm^2, cm^2, m^2, km^2, (hectares)
Volume – use mm^3, cm^3, m^3, ml, litres
Mass – use g, kg

Conversions:	1 litre = 1000 ml
1cm = 10mm	1kg = 1000g
1m = 100cm	1kg = 2.2 pounds
1km = 1000m	5 miles = 8 km

Percentage means "fraction out of 100"
50% = 0.5 = ½ ..... divide by 2
25% = 0.25 = ¼ ..... halve then halve again
10% = 0.1 = $^1/_{10}$ ..... divide by 10
1% = 0.01 = $^1/_{100}$ ..... divide by 100

Key formulae:
Circumference of circle = πd

Area of rectangle = length x width
Area of triangle = base x height ÷ 2
Area of circle = πr^2

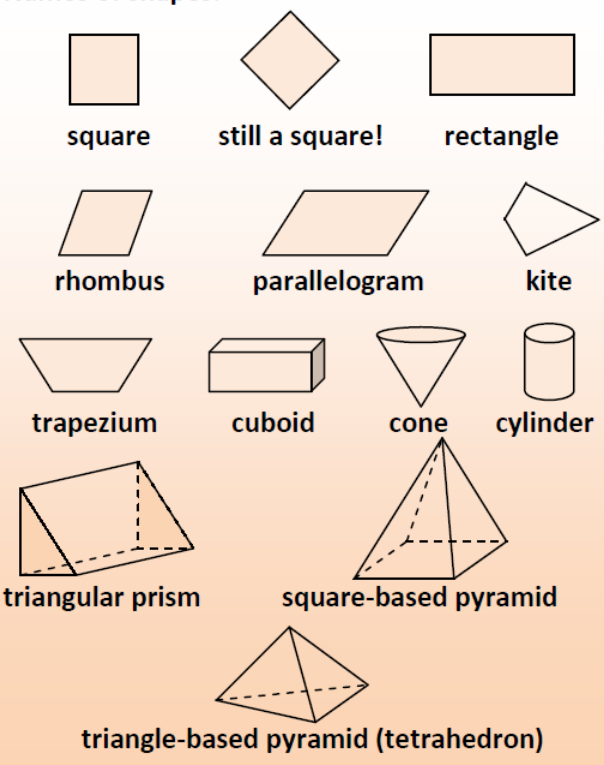
Volume of cuboid = length x width x height
Volume of prism =cross-section area x length

perimeter is the distance round the edge
area is the space inside the shape

Special words:
sum – add the numbers together
product – multiply the numbers
difference – biggest take away the smallest
estimate – round the numbers first and give an approximate answer
solve – work out the value of the letter
correlation – the relationship between 2 variables, can be **positive**, **negative** or **no correlation**. Draw a line of best fit if correlation is positive/negative.
expand – multiply out brackets $2(x+3)=2x+6$
factorise – put brackets back in $x^2-3x = x(x-3)$
tessellate – fit shapes together with no gaps

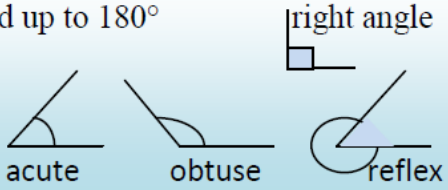
Averages:
mode/modal – the most common value or values
median – the middle value when they are in order
mean – add up all the values and divide by the number of terms
range – highest value take away the lowest value

Names of shapes:



GCSE Maths – Foundation Tier: **LEARN THESE FACTS!** You will not be given them in the exam.

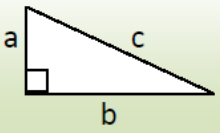
Angle Rules: Opposite angles are equal
Angles on a straight line add up to 180°
Angles at a point add up to 360°
Angles in a triangle add up to 180°
Angles in a quadrilateral add up to 360°
Alternate angles in parallel lines (Z angles) are equal
Corresponding angles in parallel lines (F angles) are equal
Interior angles in parallel lines (C angles) add up to 180°



BRACKETS
INDICES
DIVISION
MULTIPLICATION
ADDITION
SUBTRACTION

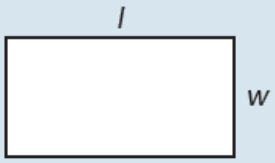
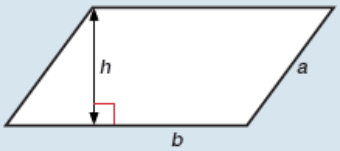
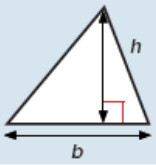
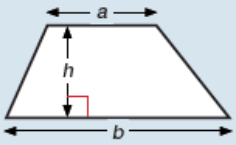
Perform calculations in the correct order

Pythagoras' theorem

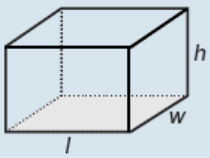
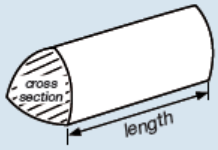
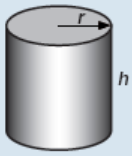
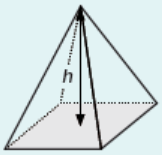


$a^2 + b^2 = c^2$

Areas

Rectangle = $l \times w$	
Parallelogram = $b \times h$	
Triangle = $\frac{1}{2} b \times h$	
Trapezium = $\frac{1}{2}(a + b)h$	

Volumes

Cuboid = $l \times w \times h$	
Prism = area of cross section × length	
Cylinder = $\pi r^2 h$	
Volume of pyramid = $\frac{1}{3}$ × area of base × h	

Circles

Circumference = $\pi \times$ diameter, $C = \pi d$

Circumference = $2 \times \pi \times$ radius, $C = 2\pi r$

Area of a circle = π x radius squared $A = \pi r^2$