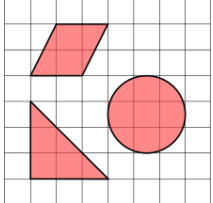
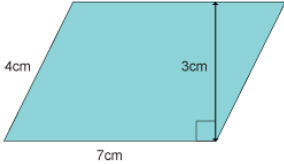
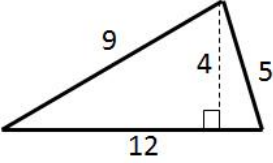
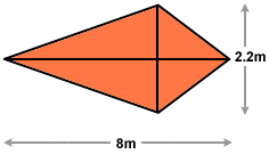
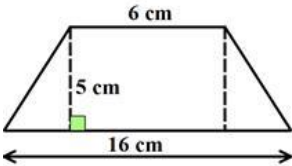
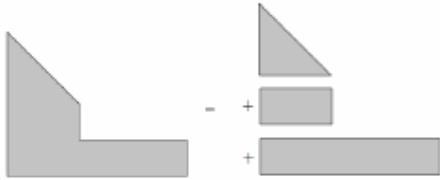
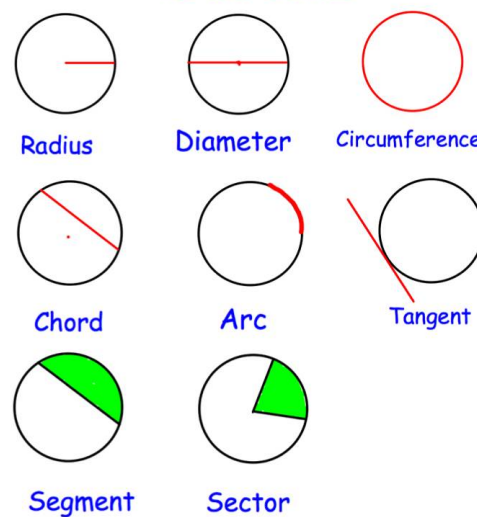
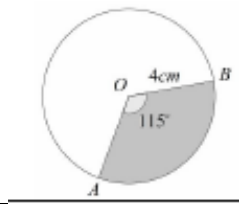
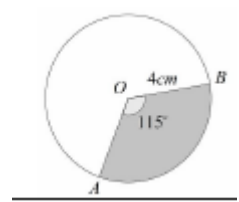
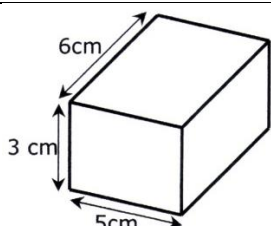
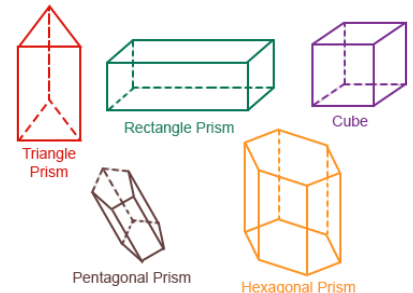
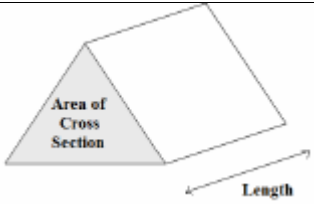
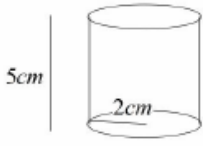
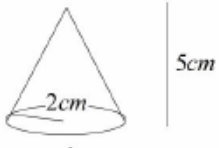
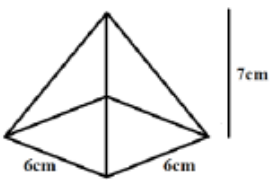
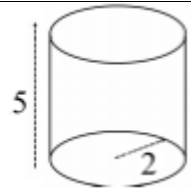
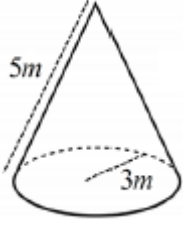
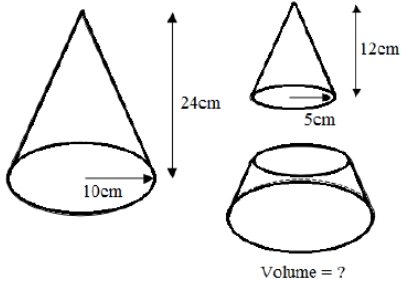
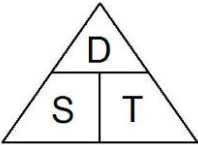
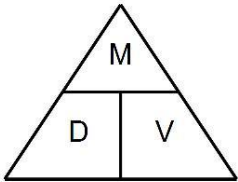
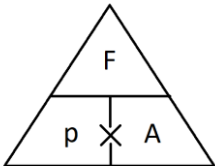


Knowledge Organiser: Measures

Topic/Skill	Definition/Tips	Example
Perimeter	The total distance around the outside of a shape. Units include: <i>mm, cm, m</i> etc.	8 cm  5 cm $P = 8 + 5 + 8 + 5 = 26cm$
Area	The amount of space inside a shape. Units include: <i>mm², cm², m²</i>	
Area of a Rectangle	Length x Width	 $A = 36cm^2$
Area of a Parallelogram	Base x Perpendicular Height (Not the slant height).	 $A = 21cm^2$
Area of a Triangle	$\frac{1}{2} \times \text{Base} \times \text{Height}$	 $A = 24cm^2$
Area of a Kite	Split in to two triangles and use the method above.	 $A = 8.8m^2$
Area of a Trapezium	$\frac{(a + b)}{2} \times h$	 $A = 55cm^2$
Compound Shape	A shape made up of a combination of other known shapes put together.	

Parts of a Circle	Radius – the distance from the centre of a circle to the edge Diameter – the total distance across the width of a circle through the centre. Circumference – the total distance around the outside of a circle Chord – a straight line whose end points lie on a circle Tangent – a straight line which touches a circle at exactly one point Arc – a part of the circumference of a circle Sector – the region of a circle enclosed by two radii and their intercepted arc Segment – the region bounded by a chord and the arc created by the chord	Parts of a Circle  Radius Diameter Circumference Chord Arc Tangent Segment Sector
Area of a Circle	$A = \pi r^2$ which means 'pi x radius squared'.	If the radius was 5cm, then: $A = \pi \times 5^2 = 78.5\text{cm}^2$
Circumference of a Circle	$C = \pi d$ which means 'pi x diameter'	If the radius was 5cm, then: $C = \pi \times 10 = 31.4\text{cm}$
Arc Length of a Sector	The arc length is part of the circumference. Take the angle given as a fraction over 360° and multiply by the circumference.	Arc Length = $\frac{115}{360} \times \pi \times 8 = 8.03\text{cm}$ 
Area of a Sector	The area of a sector is part of the total area. Take the angle given as a fraction over 360° and multiply by the area.	Area = $\frac{115}{360} \times \pi \times 4^2 = 16.1\text{cm}^2$ 
Volume of a Cube/Cuboid	$V = \text{Length} \times \text{Width} \times \text{Height}$ $V = L \times W \times H$ You can also use the Volume of a Prism formula for a cube/cuboid. Units: $\text{mm}^3, \text{cm}^3, \text{m}^3$ etc.	 volume = $6 \times 5 \times 3 = 90\text{ cm}^3$
Prism	A prism is a 3D shape whose cross section is the same throughout.	 Triangle Prism Rectangle Prism Cube Pentagonal Prism Hexagonal Prism

Volume of a Prism	$V = \text{Area of Cross Section} \times \text{Length}$ $V = A \times L$	
Volume of a Cylinder	$V = \pi r^2 h$	 $V = \pi(4)(5)$ $= 62.8\text{cm}^3$
Volume of a Cone	$V = \frac{1}{3}\pi r^2 h$	 $V = \frac{1}{3}\pi(4)(5)$ $= 20.9\text{cm}^3$
Volume of a Pyramid	$\text{Volume} = \frac{1}{3}Bh$ where B = area of the base	 $V = \frac{1}{3} \times 6 \times 6 \times 7 = 84\text{cm}^3$
Volume of a Sphere	$V = \frac{4}{3}\pi r^3$ Look out for hemispheres – just halve the volume of a sphere.	Find the volume of a sphere with diameter 10cm. $V = \frac{4}{3}\pi(5)^3 = \frac{500\pi}{3}\text{cm}^3$
Surface Area of a Sphere	$SA = 4\pi r^2$	Find the surface area of a sphere with diameter 12cm. $SA = 4\pi(6)^2 = 144\pi\text{cm}^2$
Surface Area of a Cylinder	Curved Surface Area = πdh or $2\pi rh$ Total SA = $2\pi r^2 + \pi dh$ or $2\pi r^2 + 2\pi rh$	 $\text{Total SA} = 2\pi(2)^2 + \pi(4)(5) = 28\pi$
Surface Area of a Cone	Curved Surface Area = πrl where l = slant height Total SA = $\pi rl + \pi r^2$ You may need to use Pythagoras' Theorem to find the slant height	 $\text{Total SA} = \pi(3)(5) + \pi(3)^2 = 24\pi$

Frustums	A frustum is a solid (usually a cone or pyramid) with the top removed. Find the volume of the whole shape, then take away the volume of the small cone/pyramid removed at the top.	 $V = \frac{1}{3}\pi(10)^2(24) - \frac{1}{3}\pi(5)^2(12)$ $= 700\pi\text{cm}^3$
Metric System	A system of measures based on: - the metre for length - the kilogram for mass - the second for time Length: mm, cm, m, km Mass: mg, g, kg Volume: ml, cl, l	1kilometre = 1000 metres 1 metre = 100 centimetres 1 centimetre = 10 millimetres 1 kilogram = 1000 grams 1000 kilogram = 1 tonne 1 litre = 1000 millilitres
Speed, Distance, Time	Speed = Distance ÷ Time Distance = Speed x Time Time = Distance ÷ Speed  Remember the correct units.	Speed = 4mph Time = 2 hours Find the Distance. $D = S \times T = 4 \times 2 = 8 \text{ miles}$
Density, Mass, Volume	Density = Mass ÷ Volume Mass = Density x Volume Volume = Mass ÷ Density  Remember the correct units.	Density = 8kg/m³ Mass = 2000g Find the Volume. $V = M \div D = 2 \div 8 = 0.25\text{m}^3$
Pressure, Force, Area	Pressure = Force ÷ Area Force = Pressure x Area Area = Force ÷ Pressure  Remember the correct units.	Pressure = 10 Pascals Area = 6cm² Find the Force $F = P \times A = 10 \times 6 = 60 \text{ N}$