MATHEMATICS - YEAR 9 HIGHER TERM 3

A	AREA AND VOLUME	
1	Area of a Trapezium	$=\frac{1}{2}(a+b)h$
2	Units	$1cm^2 = 100mm^2$ 1 hectare (ha) $= 10000m^2$
3	Error Interval	The range of values within which a rounded number could be. E.g. a value rounded to the nearest integer is 13, The error interval is $12.5 \leq x < 13.5$
4	Volume	The space within a 3D shape (m^3, mm^3, cm^3)
5	Capacity	The volume of liquid that fits within a 3D shape (ml, litres). $1cm^3 = 1ml$
6	Surface Area	The total area of all faces of a 3D shape
7	Prism	A 3D shape with a constant cross-section
8	Volume of a Prism	Area of cross-section x length
9	Circumference	The perimeter of a circle. $C=\pi d$ or $C=2\pi r$
10	Area of a Circle	$A=\pi r^2$
11	Cylinder	The volume of a cylinder of radius r and height h is: $V = \pi r^2 h$ The surface area of the same cylinder is: S.A. $= 2\pi r^2 + 2\pi rh$
12	Sphere	For a sphere of radius r: Surface Area $= 4\pi r2$ Volume $= \frac{4}{3}\pi r^3$
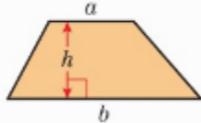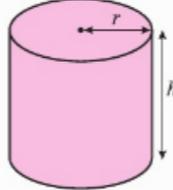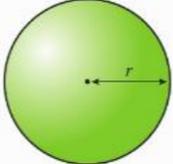
| 13 | Volume of a Pyramid | $\frac{1}{3}$ area of base x vertical height |
| 14 | Cone | Volume $= \frac{1}{3}\pi r2h$ (h is vertical height)
 Surface area $= \pi rl + \pi r^2$
 (l is the slant height, πrl is the curved surface area) |
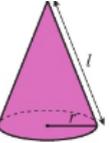
B	TRANSFORMATIONS AND CONSTRUCTIONS	
1	Views	From above is called the plan view, from the front is the front elevation and the side is the side elevation
2	Transformation	Moves a shape to a different position. Types include: Translation, Reflection, Rotation and Enlargement.
3	Object	An original shape pre-transformation
4	Image	The result of a transformation
5	Rotation	The object rotates. Moves by an angle, (anti)clockwise and from a centre of rotation. Object and Image are congruent.
6	Enlargement	A change in size (larger or smaller). Moves using a scale factor and from a centre of enlargement. Object and image are similar. Area increases bythe (scale factor)^2
7	Translation	The shape moves position only. It is described by a column vector e.g. $\binom{2}{-3}$ meaning 2 right, 3 down. Object and image are congruent
8	Reflection	The shape reflects over a mirror line which can be an equation. Object and image are congruent
9	Resultant Vector	Where several vectors combine into 1 single vector
10	Bearings	An angle measured clockwise from north, given as 3 digits, used for directions

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B	TRANSFORMATIONS AND CONSTRUCTIONS	
11	Construct	Draw accurately using a ruler and compass
12	Perpendicular Bisector	Cuts a line exactly in half at 90°
13	Angle Bisector	Cuts and angle exactly in half
14	Locus	A set of points that obey a rule
15	Locus: fixed distance from a Point	A circle drawn around the point
16	Locus: Equidistant from 2 Points	Points lie on the perpendicular bisector
17	Locus: Equidistant from 2 Lines	Points lie on the angle bisector