Foundation Unit 17 – Perimeter, area and volume

1	**Keyword**	**Definition / Explanation**
2	Circle	Set of points equal distance from a centre.
3	Formula: area of circle	πr^2 where r is the radius
4	Formula: circumference of circle	πd where d is the diameter
5	Radius	Distance from centre to edge of circle.
6	Diameter	Distance across circle through centre.
7	Circumference	Distance around circle.
8	Arc	Part of a circle's circumference.
9	Formula: Arc length	$\pi d \times \frac{\theta}{360}$ where θ is the angle of the sector
10	Sector	'Slice' of a circle between two radii.
11	Formula: Sector area	$\pi r^2 \times \frac{\theta}{360}$ where θ is the angle of the sector
12	Pythagoras' Theorem	In a right-angled triangle: $a^2 + b^2 = c^2$ where c is the hypothenuse
13	Trigonometry (basic)	Links angles and sides in right-angled triangle. SOH-CAH-TOA
14	Prism	3D solid with identical cross-sections.
15	Volume of Prism	Area of cross-section × length.
16	Surface Area	Total area of all faces of 3D shape.
17	Cylinder	3D solid with two parallel circular bases.
18	Cylinder (volume)	$\pi r^2 h$
19	Cylinder (surface area)	$2\pi r^2 + 2\pi rh$
20	Cone	Solid with circular base tapering to a point.
21	Cone (volume)	$\frac{1}{3}\pi r^2 h$
22	Cone (surface area)	$\pi r^2 + \pi rl$ where l is the slanted length

Foundation Unit 18 – Fractions, indices and standard form

1	Fraction (simplify)	Reduce fraction to lowest terms by dividing numerator and denominator by same value
2	Equivalent Fractions	Fractions with same value.
3	Improper Fraction	Top number bigger than bottom.
4	Mixed Number	Whole number and a fraction.
5	Reciprocal	1 divided by the number.
6	Index / Power	Tells how many times to multiply by itself.
7	Index Laws	Rules for multiplying/dividing powers.
8	Indices. Multiplication law	$a^m \times a^n = a^{m+n}$
9	Indices. Division law	$a^m \div a^n = a^{m-n}$
10	Square Number	Number × itself.
11	Cube Number	Number × itself × itself.
12	Root	Opposite of powers.
13	Standard Form	A number written as $a \times 10^n$ where 0<a<1 and n is an integer

Foundation Unit 19 – Congruence, similarity and vectors

1	Congruent Shapes	Shapes identical in size and shape.
2	Similar Shapes	Same shape but different size: , angles equal and sides are in proportion.

3	Scale Factor (enlargement)	Ratio between lengths in similar shapes.
4	Vector	Quantity with magnitude and direction.
5	Column Vector	Vertical form showing movement. Top value is left/right, bottom value is up/down
6	Parallel Vectors	Vectors in same or opposite direction. They are multiples of each other
7	Resultant Vector	Single vector combining movements.

Higher Unit 16 – Circle theorems

1	Circle Theorem	A proven fact about angles/lines in a circle.
2	Angle at the Centre	Angle at the centre = 2 × angle at the circumference on same arc.
3	Angle in a Semicircle	Angle subtended at circumference in a semicircle = 90°.
4	Cyclic Quadrilateral	Opposite angles in a cyclic quadrilateral add to 180°.
5	Tangents from a Point	Two tangents from same point are equal in length.
6	Radius ⊥ Tangent	A tangent is perpendicular to the radius at the point of contact.
7	Alternate Segment Theorem	Angle between tangent & chord = angle in opposite segment.
8	Chord Bisector	The perpendicular from the centre to a chord bisects the chord.
9	Subtended	An angle is *subtended* when it is formed at a point by two lines (often from the ends of a chord or arc).

Higher Unit 17 – Further algebra

1	Proof	A logical, step-by-step demonstration that something is true.
2	Identity	An equation true for all values of the variable.
3	Equation	A statement with an equals sign that can be solved.
4	Rearranging	Changing the order of an equation to make it easier to solve.
5	Subject of a Formula	The variable that is isolated on one side of an equation.
6	Change the Subject	Rearranging formula so a different variable is the subject.
7	Expand	Remove brackets by multiplying out.
8	Simplify	Collect like terms or reduce fraction.
9	Algebraic Fraction	Fraction with polynomials in numerator/denominator.
10	Rationalise Denominator	Remove surd from denominator.
11	Surd	An irrational root left in exact form.
12	Quadratic Inequality	Inequality involving $ax^2 + bx + c$
13	Function	A rule that links each input to exactly one output.
14	Function Notation	f(x) means “the function f of x”. To evaluate, substitute a value of x into the expression
15	Composite Function	Applying one function after another.
16	Inverse Function	Reverses the effect of a function.

Higher Unit 18 – Vectors and geometric proof

1	Vector	A quantity with both magnitude and direction.
2	Column Vector	Shows movement horizontally (x) and vertically (y).
3	Parallel Vectors	Scalar multiples of each other.

4	Vector Proof	Using vectors to show geometric facts (e.g. lines parallel, points collinear).
5	Resultant Vector	Single vector representing two or more combined movements.
6	Scalar	A number multiplying a vector.
7	Collinear	Points lie on the same straight line.

Command words

1	Prove	Give a complete, logical argument with no gaps.
2	Show that	Demonstrate step by step why a result holds.
3	Justify	Give mathematical reasoning for an answer.
4	Compare	State similarities/differences, usually with supporting figures.
5	Interpret	Explain meaning of result in context.
6	Construct	Use compasses/ruler/protractor accurately.