Year 11 Foundation Unit 2 KO – Indices and Standard Form, Similarity and Congruence in 2D, Vectors, Rearranging Equations, Graphs of Cubic and Reciprocal Functions

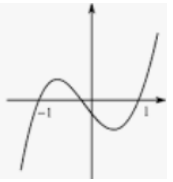
Indices and Powers			
1	Index Number/ Indices/ Power	A figure that represents the number of times a number is multiplied by itself.	
2	Index Notation	Represents repeated multiplications of the same number.	
3	Index Laws	Anything to the power of zero is 1.	$a^0 = 1$
		Anything to the power of 1 is itself.	$a^1 = a$
		Power multiplied by a power – add the indices.	$a^m \times a^n = a^{m+n}$
		Power divided by a power – subtract the indices.	$a^m \div a^n = a^{m-n}$
		Power to a power - multiply the indices.	$(a^m)^n = a^{m \times n}$

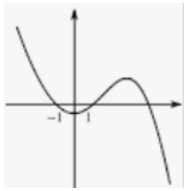
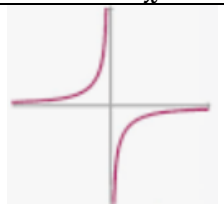
Standard Form			
1	Standard Form	A scientific notation where a number is written in two parts: $A \times 10^b$	
		$1 \leq A < 10$	$b = integer$ (Positive or negative)
2	Multiply in standard form	Multiply the numbers and add the powers.	
3	Divide in standard form	Divide the numbers and subtract the powers.	
4	Add in standard form	Convert into ordinary numbers, calculate and then convert back into standard form.	
5	Subtract in standard form	Convert into ordinary numbers, calculate and then convert back into standard form.	

Similarity and Congruence		
1	Congruent	Two shapes that are exactly the same size with the same angles.
3	Proving Congruence in triangles	SAS – side, angle, side SSS – side, side, side ASA – angle, side, angle RHS – Right- angle, hypotenuse, side
4	Similar	When one shape is an enlargement of another. The angles are the same size.
5	Scale Factor	The multiplying factor applied to an original object, in order to achieve an enlarged image.

Vectors		
1	Vector	Have magnitude (size) and direction.
2	(Column) Vector	$\begin{matrix} -Left \\ -Down \end{matrix} \begin{pmatrix} x \\ y \end{pmatrix} \begin{matrix} +Right \\ +Up \end{matrix}$
3	Parallel Vectors	Can be identified if one is a multiple of the other.
4	Adding Vectors	$\begin{pmatrix} a \\ b \end{pmatrix} + \begin{pmatrix} c \\ d \end{pmatrix} = \begin{pmatrix} a+b \\ c+d \end{pmatrix}$
5	Subtracting Vectors	$\begin{pmatrix} a \\ b \end{pmatrix} - \begin{pmatrix} c \\ d \end{pmatrix} = \begin{pmatrix} a-b \\ c-d \end{pmatrix}$
6	Multiplying Vectors	$x\begin{pmatrix} a \\ b \end{pmatrix} = \begin{pmatrix} xa \\ b \end{pmatrix}$

Rearranging Equations		
1	Subject of a formula	The letter on its own one side of the equal's sign.
2	Rearrange	To change the subject of a formula.

Graphs				
1	Straight line graphs	$y = mx + c$	m = gradient c = y intercept	
2	Y intercept (c)	Where the line crosses the y axis.		
3	Gradient	The steepness of a line.	$\frac{Change\ in\ y}{Change\ in\ x}$ $= \frac{y_2 - y_1}{x_2 - x_1}$	
4	Cubic Graph	A curved graph.	Positive ax^3	

		$y = ax^3 + bx^2 + cx + d$	Negative ax^3	
5	Reciprocal Graph	A graph that creates a hyperbola. It has a vertical and horizontal asymptote.	$y = \frac{k}{x}$ 	$y = \frac{-k}{x}$ 

Simultaneous Equations		
1	Simultaneous equations	Two or more equations that have the same solution to their variables.
2	Elimination	To remove a variable
3	Substitute	Replacing a variable with a numerical value.
4	Process used to eliminate - DASS	If the signs are … D – different A - add S – same S - subtract