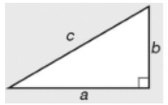
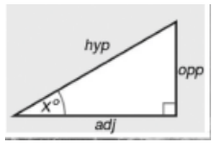
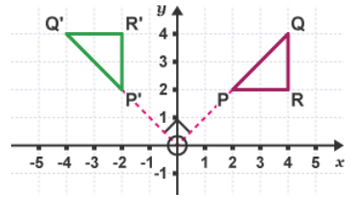
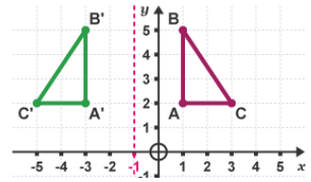
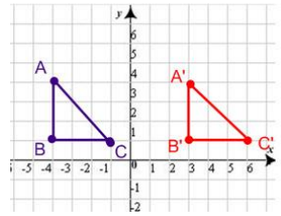
Year 9 – Maths – Summer 1

Unit 15 – Pythagoras		
No.	**Question**	**Answer**
15.1	What is Pythagoras Theorem? 	$a^2 + b^2 = c^2$ Used to find a missing **side** in right angled triangles when you know two sides
15.2	What is the hypotenuse?	Longest side in a right angled triangle (c)
15.3	What is trigonometry? 	Used to find missing **sides** or **angles** in right angled triangles
15.4	What is the sin θ ratio?	$\frac{opp}{hyp}$
15.5	What is the cos θ ratio?	$\frac{adj}{hyp}$
15.6	What is the tan θ ratio?	$\frac{opp}{adj}$
15.7	What is the value of sin 30?	$\frac{1}{2}$
15.8	What is the value of cos 60?	$\frac{1}{2}$
15.9	What is the value of tan 45?	1

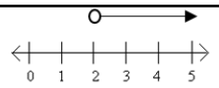
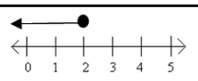
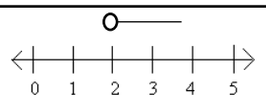
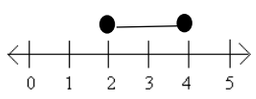
Unit 16 – transformations			
No.	**Question**	**Answer**	**Example**
16.1	Rotation	Must include: • Centre of rotation • Direction • Degrees	*This shape has been **rotated** from **centre (0,0) anti-clockwise 90°*** 
16.2	Reflection	Must include: • Line of symmetry	*This shape has been **reflected** in the **line x = -1*** 
16.3	Translation	Must include: • Vector e.g. $\begin{pmatrix}2\\5\end{pmatrix}$ 2 right, 5 up $\begin{pmatrix}-2\\-5\end{pmatrix}$ 2 left, 5 down	*This shape has been **translated** by **vector** $\begin{pmatrix}7\\0\end{pmatrix}$* 
16.4	$\begin{pmatrix}a\\b\end{pmatrix}$	a right, b up	
16.5	$\begin{pmatrix}-a\\-b\end{pmatrix}$	a left, b down	

Date (week commencing)	Numbers to learn
25/04/22	**15.1-15.3**
02/05/22	**15.1-15.9**
09/05/22	**16.1-16.5**
16/02/22	**16.1-17.1**
23/02/22	**15.1-17.1**

Unit 17 - proof		
No.	**Question**	**Answer**
17.1	The four tests for congruence are	SSS ASA SAS RASH

Year 9 – Maths – Spring 2

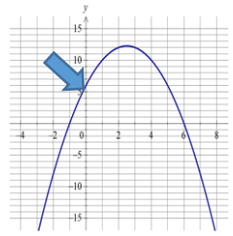
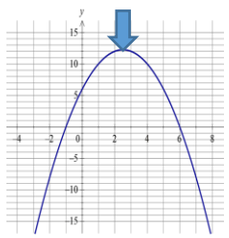
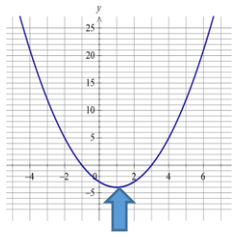
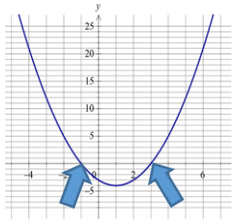
Unit 12 - equations

No.	Question	Answer	Example
12.1	What does solve mean?	Find the unknown	Solve to find x: $2x + 1 = 5$, $2x = 4$, $x = 2$
12.2	What is the unknown?	The letter in an equation	$2x + 1 = 5$ *x is the unknown*
12.3	What does expand mean?	Multiply out the bracket in the expression	$2(x + 5) = 2x + 10$
12.4	What does rearrange mean?	Make another letter the subject of the equation	Make x the subject $2x + y = z$, $2x = z - y$, $x = \frac{z - y}{2}$
12.5	What is the subject?	The letter of the equation which is on its own on one side	$x = \frac{z - y}{2}$ *x is the subject*
12.6	What is a linear equation?	An equation which forms a straight line on a graph	$2x + 5 = y$
12.7	What is a quadratic equation?	An equation containing a power which forms a curved line on a graph	$2x^2 + 5 = y$
12.8	>	Greater than	
12.9	<	Less than	
12.10	$x > 2$	x is greater than 2	
12.11	$x \geq 2$	x is greater than or equal to 2	
12.12	$x < 2$	x is less than 2	
12.13	$x \leq 2$	x is less than or equal to 2	
12.14	$2 < b < 4$	b is greater than 2 and smaller than 4	
12.15	$2 \leq b \leq 4$	b is greater than or equal to 2 and smaller than or equal to 4	

Unit 13 – simultaneous equations

No.	Question	Answer	Example
13.1	What are simultaneous equations?	A pair of equations that have the same solutions for the unknown	$x + y = 10$, $2x + y = 14$

Unit 14 – quadratic graphs

No.	Question	Answer	Example
14.1	What is the y intercept?	Where the graph crosses the y axis	
14.2	What is the maximum point?	The point of the graph where the gradient = 0 and changes from positive to negative	
14.3	What is the minimum point?	The point of the graph where the gradient = 0 and changes from negative to positive	
14.4	What are the roots?	Where the graph crosses the x axis (the solutions)	

Date (week commencing)	Numbers to learn
28th Feb	12.1 – 12.10
7th Mar	12.6 – 12.15
14th Mar	12.1 – 13.1
21st Mar	12.1 – 13.1
28th Mar	14.1 – 14.4
4th Apr	12.1 – 14.4

Date (week commencing)	Numbers to learn
4 th Jan	8.1-9.6
10th Jan	8.1-9.6
17th Jan	9.7-10.8
24th Jan	9.7-10.8
31st Jan	10.8-11.7
7th Feb	10.8-11.7
14th Feb	8.1-11.7

Learning means…

I am using look >> cover >> write >> check at least twice for this week's facts

and/or

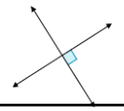
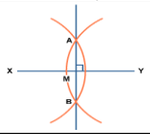
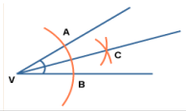
I made flash cards ("Question" on one side and "Answer" on the other) for the facts and got someone to test me on them at least twice

so that…

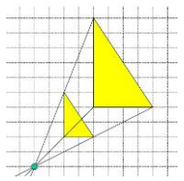
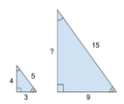
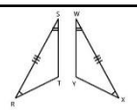
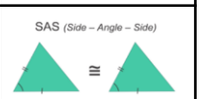
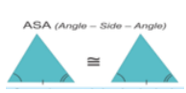
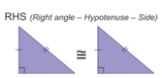
I achieve the minimum score of 8/10 on the quiz

Year 9 – Maths – Spring 1

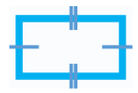
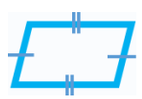
Unit 8 - constructions

No.	Question	Answer	Example
8.1	What does equidistant mean?	At equal distances	
8.2	What does perpendicular mean?	At right angles to	
8.3	What does bisector mean?	Cuts in half	
8.4	What is an angle bisector?	Cuts the angle in half	

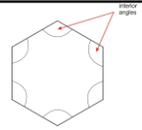
Unit 9 – similarity and congruence

No.	Question	Answer	Example
9.1	What is enlargement?	Changes the size of the shape by a scale factor from a centre point	
9.2	What is the scale factor?	What all the sides are multiplied by to get the enlargement	
9.3	What are similar shapes?	Identical in shape, angles are the same but different in size , the ratio between sides is the same	
9.4	What are congruent shapes?	Identical in shape and size	
9.5	What are the four congruency rules?	SSS SAS ASA RHS	
9.6	SSS	Side, side, side (all sides are equal)	
9.7	SAS	Side, Angle ,Side	
9.8	ASA	Angle, Side, Angle	
9.9	RHS	Right angle , Hypotenuse, Side	

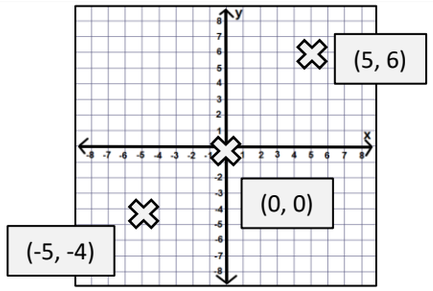
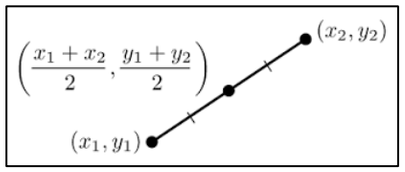
Unit 10 – triangles and quadrilaterals

No.	Question	Answer	Example
10.1	What are the properties of an equilateral triangle?	All angles are the same size and all sides are the same length.	
10.2	What are the properties of a scalene triangle?	All angles are different sizes and all sides are different lengths.	
10.3	What are the properties of a right-angled triangle?	Contains one angle of 90°	
10.4	What are the properties of a isosceles triangle?	Has 2 sides of equal length and 2 angles of equal size	
10.5	What are the properties of a square?	1. All of its sides are the same length. 2. All of its angles are equal (90°) 3. It has 2 pairs of parallel sides	
10.6	What are the properties of a rrectangle?	1. Opposite sides are the same length 2. All of its angles are equal (90°) 3. It has 2 pairs of parallel sides	
10.7	What are the properties of a rhombus?	1. All sides are the same length 2. None of its angles are 90° 3. It has 2 pairs of parallel sides	
10.8	What are the properties of a parallelogram?	1. Opposite sides are the same length 2. None of its angles are 90° 3. It has 2 pairs of parallel sides	
10.9	What are the properties of a kite?	1. Adjacent sides are the same length 2. 1 pair of opposite angles are equal 3. It has 0 pairs of parallel lines	
10.10	What are the properties of a ttrapezium?	1. It has 1 pairs of parallel lines 2. In the special case of an isosceles trapezium it has 1 pair of opposite sides of equal length	

Unit 11 - polygons

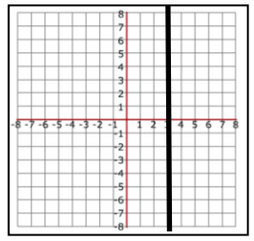
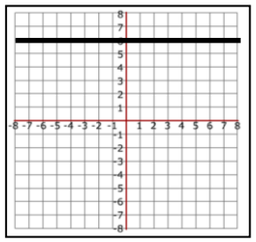
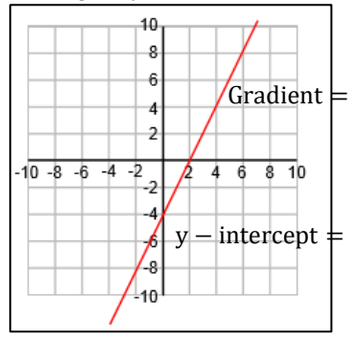
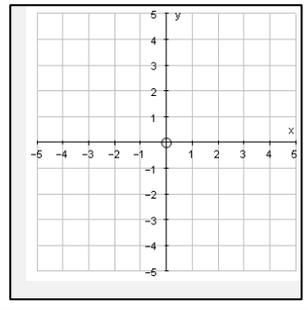
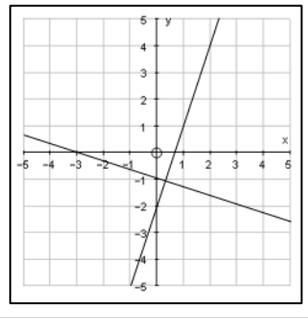
No.	Question	Answer	Example
11.1	Polygon	Any 2D shape formed with straight lines	
11.2	Regular polygon	A 2D shape formed with equal straight lines and equal interior angles	
11.3	Interior angles	The angles inside a polygon	
11.4	Sum of interior angles	(number of sides – 2) x 180°	
11.5	Exterior angles	The angles outside a polygon	
11.6	Exterior angles…	Sum to 360°	
11.7	Interior and exterior angles…	Sum to 180°	

Year 9 – Maths – Autumn 1

Unit 1 - coordinates			
No.	**Question**	**Answer**	**Example**
1.1	Coordinates are always	(x, y)	
1.2	Midpoint of a line segment	$(\frac{x_1+x_2}{2}, \frac{y+y_2}{2})$	

Unit 3 - proportion			
No.	**Question**	**Answer**	**Example**
3.1	Direct proportion	As one variable increases, the other variable increases	
3.2	Inverse proportion	As one variable increases, the other variable decreases	
3.3	The unitary method	Find one first	

Unit 4 – standard form			
No.	**Question**	**Answer**	**Example**
4.1	Standard form	A way of writing very big or very small numbers using powers of 10	4,000,000 is 4 x 10^6
4.2	10^{-3}	0.001	
4.3	10^{-2}	0.01	
4.4	10^{-1}	0.1	
4.5	10^{0}	1	
4.6	10^{1}	10	
4.7	10^{2}	100	
4.8	10^{3}	1000	

Unit 2 – y = mx + c			
No.	**Question**	**Answer**	**Example**
2.1	Vertical lines are always	x = … where all the x coordinates are the same	 x = 3
2.2	Horizontal lines are always	y = … where all the y coordinates are the same	 y = 6
2.3	m	Gradient	$Example: y = 2x - 4$ 
2.4	To find the gradient	$\frac{Difference\ in\ y}{Difference\ in\ x} = \frac{y_2 - y_1}{x_2 - x_1}$	
2.5	c	Y intercept	
2.6	To find the y–intercept	The y coordinate when x = 0 This is where the line crosses the y axis	
2.7	Parallel lines	Have the same gradient	 $y = x + 2$ $y = x$ $y = x - 2$
2.8	Perpendicular lines	$-\frac{1}{gradient}$	 $y = 3x + 2$ $y = -\frac{1}{3}x - 1$

Year 9 – Maths – Autumn 2

Unit 5 - sequences		
No.	**Question**	**Answer**
5.1	Linear/arithmetic sequence	A number pattern which increases or decreases by the same amount each time
5.2	Common difference	The amount the sequence increases or decreases by between each term
5.3	Geometric sequence	A number pattern that uses multiplication between each term
5.4	Term (sequence)	A number in a sequence
5.5	The nth term	The general rule for a number pattern
5.6	n (sequence)	The term number in the sequence e.g. when n = 10, this is the 10^{th} term in the sequence
5.7	The first 10 square numbers are	1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144
5.8	The first 5 cube numbers are	1, 8, 27, 64, 125

Unit 6 – expanding and factorising			
No.	**Question**	**Answer**	**Example**
6.1	Like Terms	Terms that have the same variables, and each variable has the same index	$2x^2y$ and $4x^2y$ $2xy$ and $4xy$
6.2	Simplify	Rewrite the expression in an easier to remember form.	Collect like terms Cancel down algebraic fractions
6.3	Expand	Multiply everything inside the bracket by the value in front of the bracket	$2(x+4) \equiv 2x+8$
6.4	Factorise	Find a common factor of each term and put the brackets back in	$2x+8 \equiv 2(x+4)$ $2x^2+4x \equiv 2x(x+4)$
6.5	Solve	Find the unknown letter	$2x+1=7$ $2x=6$ $x=3$
6.6	Subject	The variable on its own that the rest is “equal to”	$a=2b+c$ a = the subject
6.7	Rearrange	Make the given letter the subject	Make b the subject $a=2b+c$ $\frac{a-c}{2}=b$ b is now the subject because it’s on its own on one side of the equals sign