

HIGHER MODULE 5 PROGRESS SHEET

CHAPTER 1: ANGLES

GRADE	I AM ABLE TO	R	A	G
D	<ul style="list-style-type: none">• Find the area of a triangle, parallelogram, kite and trapezium• Find the area and perimeter of compound shapes• Convert between measures of area• Calculate the circumference of a circle to an appropriate degree of accuracy• Calculate the area of a circle to an appropriate degree of accuracy			
C	<ul style="list-style-type: none">• Calculate the surface areas of prisms and cylinders• Calculate volumes of triangular prisms, parallelogram-based prisms and cylinders• Calculate the perimeter and area of a semicircle• Convert between measures of volume			
A	<ul style="list-style-type: none">• Find the volume and surface area of pyramids, cones and spheres• Find the volume of the top cone of a truncated cone• Find the length of a major arc of a circle• Find the area of a major sector of a circle• Find the area of a segment of a circle			
A*	<ul style="list-style-type: none">• Find the volume of the frustum of a truncated cone			

CHAPTER 2 : PROPERTIES OF POLYGONS

GRADE	I AM ABLE TO	R	A	G
C	<ul style="list-style-type: none">• Classify a quadrilateral by geometric properties• Calculate exterior and interior angles of a regular polygon			

CHAPTER 3 : SEQUENCES

GRADE	I AM ABLE TO	R	A	G
D	<ul style="list-style-type: none">• Write the terms of a sequence or a series of diagrams given the n^{th} term			
C	<ul style="list-style-type: none">• Write the n^{th} term of a sequence or a series of diagrams			

CHAPTER 4 : COORDINATES

GRADE	I AM ABLE TO	R	A	G
D	<ul style="list-style-type: none"> Solve problems involving straight lines Draw lines such as $y = 2x + 3$ 			
C	<ul style="list-style-type: none"> find the midpoint of a line segment use and understand coordinates in three dimensions 			

CHAPTER 5 : EQUATIONS

GRADE	I AM ABLE TO	R	A	G
D	<ul style="list-style-type: none"> Solve equations such as $3x - 4 = 5$ or $2(5x + 1) = 28$ 			
C	<ul style="list-style-type: none"> Solve equations such as $3x - 12 = 2(x - 5)$, $\frac{2x}{3} - \frac{x}{4} = 5$ or $\frac{7-x}{3} = 2$ 			
B	<ul style="list-style-type: none"> Solve equations such as $\frac{2x-1}{6} + \frac{x+3}{3} = 5$ 			

CHAPTER 6 : REFLECTIONS AND ROTATIONS

GRADE	I AM ABLE TO	R	A	G
D	<ul style="list-style-type: none"> Reflect shapes in lines such as $x = 2$ or $y = -1$ Rotate shapes about the origin Describe fully reflections and rotations about the origin Identify reflection symmetry in 3-D solids 			
C	<ul style="list-style-type: none"> Reflect shapes in the lines $y = x$ and $y = -x$ Rotate shapes about any point Describe fully reflections and rotations about any point Find the centre of a rotation and describe it fully Combine reflections and rotations 			

CHAPTER 7 : PROPERTIES OF CIRCLES

GRADE	I AM ABLE TO	R	A	G
B	<ul style="list-style-type: none"> Use the angle and tangent/chord properties of a circle 			
A	<ul style="list-style-type: none"> Prove the angle and tangent/chord properties of a circle Use and prove the alternate segment theorem 			

CHAPTER 8 : TRIAL AND IMPROVEMENT

GRADE	I AM ABLE TO	R	A	G
C	<ul style="list-style-type: none"> Form and solve equations such as $x^3 + x = 12$ using trial and improvement methods 			

CHAPTER 9 : TRANSLATION AND ENLARGEMENT

GRADE	I AM ABLE TO	R	A	G
D	<ul style="list-style-type: none"> Enlarge a shape by a positive scale factor from a given centre Translate a shape using a description such as 4 units right and 3 units down 			
C	<ul style="list-style-type: none"> Enlarge a shape by a fractional scale factor Translate a shape by a vector such as $\begin{pmatrix} 4 \\ -3 \end{pmatrix}$ Transform shapes by a combination of translation, rotation and reflection Compare the area of an enlarged shape with the original shape 			
B	<ul style="list-style-type: none"> Distinguish between formulae for perimeter, area and volume by considering dimensions 			
A	<ul style="list-style-type: none"> Compare areas and volumes of enlarged shapes Enlarge a shape by a negative scale factor 			

CHAPTER 10 : MEASURES

GRADE	I AM ABLE TO	R	A	G
C	<ul style="list-style-type: none"> Solve more difficult speed problems Understand and use compound measures such as speed and density Recognise accuracy in measurements given to the nearest whole unit 			
B	<ul style="list-style-type: none"> Find the upper and lower bounds of simple calculations involving quantities given to a particular degree of accuracy 			
A-A*	<ul style="list-style-type: none"> Find the upper and lower bounds of more difficult calculations with quantities given to various degrees of accuracy 			

CHAPTER 11 : REAL-LIFE GRAPHS

GRADE	I AM ABLE TO	R	A	G
D	<ul style="list-style-type: none"> Calculate simple average speeds from distance-time graphs 			
C	<ul style="list-style-type: none"> Calculate complex average speeds from distance-time graphs 			
B	<ul style="list-style-type: none"> Interpret velocity-time graphs Discuss and interpret graphs modelling real situations 			

CHAPTER 12 : FORMULAE

GRADE	I AM ABLE TO	R	A	G
D	<ul style="list-style-type: none"> Substitute numbers into more complicated formulae such as $C = \frac{(A+1)C}{9}$ 			
C	<ul style="list-style-type: none"> Find a solution to a problem by forming an equation and solving it Rearrange linear formulae such as $p = 3q + 5$ 			
B	<ul style="list-style-type: none"> Rearrange formulae that include brackets, fractions and square roots 			
A	<ul style="list-style-type: none"> Rearrange formulae where the variable appears twice 			

CHAPTER 13 : CONSTRUCTION

GRADE	I AM ABLE TO	R	A	G
D	<ul style="list-style-type: none"> Draw a quadrilateral such as a kite or a parallelogram with given measurements Understand that giving the lengths of 2 sides and a non-included angle may not produce a unique triangle Construct and recognise the nets of 3-D solids such as pyramids and triangular prisms Draw plans and elevations of 3-D solids 			
C	<ul style="list-style-type: none"> Construct the perpendicular bisector of a line Construct the perpendicular from a point to a line Construct the perpendicular from a point on a line Construct angles of 60° and 90° Construct the bisector of an angle 			

CHAPTER 14 : VECTORS

GRADE	I AM ABLE TO	R	A	G
A	<ul style="list-style-type: none"> Add, subtract and multiply vectors to solve vector geometry problems Understand the relationship between parallel and perpendicular vectors 			
A*	<ul style="list-style-type: none"> Solve more difficult vector geometry problems 			

CHAPTER 15 : GRAPHS OF LINEAR FUNCTIONS

GRADE	I AM ABLE TO	R	A	G
D	<ul style="list-style-type: none"> Solve problems involving graphs, such as finding where the line $y = x + 2$ crosses the line $y = 1$ 			
C	<ul style="list-style-type: none"> Recognise the equations of straight-line graphs such as $y = -4x + 2$ Find the gradients of straight-line graphs 			
B	<ul style="list-style-type: none"> Explore the gradients of parallel straight-line graphs 			
A	<ul style="list-style-type: none"> Explore the gradients of perpendicular straight-line graphs 			

CHAPTER 16 : SIMILARITY AND CONGRUENCE

GRADE	I AM ABLE TO	R	A	G
C	<ul style="list-style-type: none"> Match one side and one angle of congruent triangles, given some dimensions 			
B	<ul style="list-style-type: none"> Match sides and angles of similar triangles, given some dimensions 			
A	<ul style="list-style-type: none"> Prove that two triangles are congruent Prove the construction theorems Find the area of a 2-D shape, given the area of a similar shape and the ratio Find the volume of a 3-D solid, given the volume of a similar solid and the ratio 			

CHAPTER 17 : PYTHAGORAS' THEOREM

GRADE	I AM ABLE TO	R	A	G
C	<ul style="list-style-type: none"> Use Pythagoras' theorem to find the hypotenuse of a right-angled triangle Use Pythagoras' theorem to find any side of a right-angled triangle Use Pythagoras' theorem to find the height of an isosceles triangle Use Pythagoras' theorem in practical problems 			
B	<ul style="list-style-type: none"> Find the distance between two points from their coordinates 			
A	<ul style="list-style-type: none"> Use Pythagoras' theorem in 3-D problems 			

CHAPTER 18 : QUADRATIC FUNCTIONS

GRADE	I AM ABLE TO	R	A	G
B	<ul style="list-style-type: none"> Solve quadratic equations such as $x^2 - 8x + 15 = 0$ by factorisation 			
A	<ul style="list-style-type: none"> Solve equations such as $x^2 - 2x - 1 = 0$ by using the quadratic formula 			
A*	<ul style="list-style-type: none"> Solve equations such as $\frac{4}{x+2} + \frac{3}{2x-1} = 2$ Write quadratic expressions in forms like $(x+a)^2 + b$ (ie. Complete the square) Use completing the square to solve equations and find maximum and minimum values 			

CHAPTER 19 : INEQUALITIES AND SIMULTANEOUS EQUATIONS

GRADE	I AM ABLE TO	R	A	G
C	<ul style="list-style-type: none"> Solve inequalities such as $3x < 9$ and $12 < 3n < 20$ Solve linear inequalities such as $4x - 3 < 10$ and $4x < 2x + 7$ Represent sets of solutions on the number line 			
B	<ul style="list-style-type: none"> Solve linear inequalities such as $x + 13 > 5x - 3$ Solve a set of linear inequalities in two variables and represent the solution as a region of a graph Solve a pair of simultaneous equations in two unknowns, such as $2x + y = 5$ and $3x - 2y = 4$ Know that each equation can be represented by a line on a graph and that the point of intersection of the lines is the solution 			
A	<ul style="list-style-type: none"> Solve a pair of simultaneous equations where one is linear and one is non-linear, such as $y = 3x - 2$ and $y = x^2$ 			
A*	<ul style="list-style-type: none"> Solve a pair of simultaneous equations where one is linear and one is non-linear, such as $x + 5y = 13$ and $x^2 + y^2 = 13$ 			

CHAPTER 20 : TRIGONOMETRY

GRADE	I AM ABLE TO	R	A	G
B	<ul style="list-style-type: none"> • Use sine, cosine and tangent to calculate a side in a right-angled triangle • Use sine, cosine and tangent to calculate an angle in a right-angled triangle 			
A	<ul style="list-style-type: none"> • Sketch and draw trigonometric graphs • Use the sine rule and the cosine rule to find the missing sides and missing angles in any triangle • Use the formula for the area of a non right-angled triangle 			
A*	<ul style="list-style-type: none"> • Use trigonometry to find sides and angles in 3-D • Understand the graphs of trigonometric functions for angles of any size • Find the angle between a line and a plane 			

CHAPTER 21 : OTHER FUNCTIONS

GRADE	I AM ABLE TO	R	A	G
B	<ul style="list-style-type: none"> • Complete tables for, and draw graphs of, cubic and reciprocal functions • Use the graphs to solve equations 			
A*	<ul style="list-style-type: none"> • Solve cubic equations by drawing appropriate lines on graphs • Plot and sketch graphs of exponential functions • Recognise the shapes of graphs of functions 			

CHAPTER 22 : LOCI

GRADE	I AM ABLE TO	R	A	G
D	<ul style="list-style-type: none"> • Understand the idea of a locus 			
C	<ul style="list-style-type: none"> • Construct accurately loci, such as those of points equidistant from two fixed points • Solve loci problems, such as identifying points less than 3cm from a point P 			
A	<ul style="list-style-type: none"> • Construct the graphs of loci, including the circle $x^2 + y^2 = r^2$ • Solve simultaneous equations graphically, such as $y = x - 1$ and $x^2 + y^2 = 16$ 			
A*	<ul style="list-style-type: none"> • Solve simultaneous equations graphically, such as $y = 2x - 1$ and $x^2 + y^2 = 27$ 			

CHAPTER 23 : TRANSFORMING FUNCTIONS

GRADE	I AM ABLE TO	R	A	G
A*	<ul style="list-style-type: none">• Transform the graphs of $y = f(x)$, such as linear, quadratic, cubic, sine and cosine functions, using the transformations $y = f(x) + a$, $y = f(x + a)$, $y = af(x)$ and $y = f(ax)$			

CHAPTER 24 : ALGEBRAIC PROOFS

GRADE	I AM ABLE TO	R	A	G
D	<ul style="list-style-type: none">• Decide with a reason whether a harder statement is true or false• Identify a counter example			
C	<ul style="list-style-type: none">• Understand the difference between a demonstration and a proof• Show step-by-step deductions in providing a basic algebraic explanation			
B	<ul style="list-style-type: none">• Show step-by-step deductions in providing a full mathematical explanation			
A	<ul style="list-style-type: none">• Derive simple algebraic proofs using reasoning			
A*	<ul style="list-style-type: none">• Derive harder algebraic proofs using reasoning and logic			