S4 National 5 Maths – Success Criteria

Skills, knowledge and understanding for the course:
- ✓ Understand and use mathematical concepts and relationships.
- ✓ Select and apply numerical skills.
- ✓ Select and apply skills in algebra, geometry, trigonometry and statistics.
- ✓ Use mathematical models.
- ✓ Use mathematical reasoning skills to interpret information, to select a strategy to solve a problem, and to communicate solutions.

Skills, knowledge and understanding for the assessment:

Topic	I can...
Multiplying Brackets	☐ Expand a single bracket ☐ Expand two single brackets and simplify ☐ Expand double brackets ☐ Multiply a linear term by a quadratic term
Volume of Solids	☐ Calculate the volume of a cuboid, prism, cylinder, sphere, cone & pyramid ☐ Calculate the volume of a composite shapes ☐ Calculate either the radius, diameter or height of a shape given the volume
Percentages & Fractions	☐ Round to any number of significant figures ☐ Calculate compound interest ☐ Find the value of an item after it has appreciated/depreciated in price over several years ☐ Find the original price of an item after its value has increased/decreased ☐ Add, subtract, multiply & divide fractions including mixed numbers ☐ Use BODMAS
Factorising	☐ Find a common factor ☐ Recognise and factorise the difference of two squares ☐ Factorise trinomials with $1x^2$ ☐ Factorise trinomials with $2x^2$, $3x^2$ etc
Scientific Notation	☐ Change very large numbers into scientific notation ☐ Change very small numbers into scientific notation ☐ Do scientific calculations using a calculator ☐ Decide whether to add, subtract, multiply or divide to solve problems
ASSESSMENT 1	
Equation of a Straight Line	☐ Find the gradient between two points using the gradient formula ☐ Read the gradient and y-intercept from a graph ☐ Rearrange an equation into the form y = mx + c to read off the gradient and y-intercept ☐ Use y - b = m(x - a) to find the equation of a straight line
Arcs & Sectors	☐ Calculate the length of an arc ☐ Calculate the area of a sector ☐ Find the angle given either the arc length or sector area
Surds	☐ Simplify surds ☐ Add & subtract surds ☐ Multiply & divide surds

	☐	Rationalise the denominator of a fraction
Equations & Inequations	☐	Solve equations with x on both sides
	☐	Solve equations which include fractions
	☐	Solve the above as inequalities

ASSESSMENT 2		
Change the Subject	☐	Rearrange an equation so that a different letter is at the front
Pythagoras	☐	Calculate and side of a right angled triangle
	☐	Recognise a right angled triangle within a circle problem and use Pythagoras to solve it
	☐	Prove whether a triangle is right angled or not by using the converse of Pythagoras
	☐	Find the length of a diagonal in a 3D shape by using Pythagoras twice
Trigonometry	☐	Use SOH CAH TOA to find any side or angle in a right angled triangle
	☐	Calculate the area of any triangle using the area formula
	☐	Calculate a side or angle in a triangle using the Sine rule
	☐	Calculate a side or angle in a triangle using the Cosine rule
	☐	Use bearings alongside Trigonometry calculations
Properties of 2D Shapes	☐	Identify right angled triangles within circles using the tangent rule (a tangent meets the radius at a right angle)
	☐	Identify right angled triangles within circles using the diameter rule (the diameter forms a triangle and meets the circle at a right angle)
	☐	Use two radii to form an isosceles triangle
	☐	Use the above to find missing angles
	☐	Calculate angles in polygons
Statistics	☐	Find the mean, median, mode & range from a set of data
	☐	Calculate the semi interquartile range
	☐	Calculate the standard deviation
	☐	Make comparisons between two means, medians, semi interquartile ranges & standard deviations
	☐	Find the equation of a line of best fit on a scattergraph and use this equation to estimate answers

ASSESSMENT 3		
Algebraic Fractions	☐	Simplify algebraic fractions by cancelling the same from the top and bottom
	☐	Simplify algebraic fractions by factorising first
	☐	Add, subtract, multiply & divide algebraic fractions
Functions & Function Notation	☐	Substitute numbers into functions and evaluate
	☐	Substitute letters into functions
	☐	Given the evaluation find the value of the letter
	☐	Draw functions by plotting points
Similarity	☐	Show that two shapes are similar
	☐	Calculate the length of a side
	☐	Calculate the area of a shape
	☐	Calculate the volume of a shape
Completing the Square	☐	Write quadratics in completed square form $(x + a)^2 + b$

ASSESSMENT 4		

Graphs of Quadratic Functions	☐ Recognise and draw equations of the form $y = kx^2$ ☐ Recognise and draw equations of the form $y = (x + p)^2 + q$ ☐ Recognise and draw equations of the form $y = (x + a)(x + b)$ ☐ Write down the nature, turning point & equation of the axis of symmetry
Quadratic Equations	☐ Solve given the factorised form ☐ Solve by factorising first ☐ Solve by using the quadratic formula ☐ Use the discriminant to decide how many roots a function has
Indices	☐ Multiply & divide indices ☐ Increase the power of an index ☐ Change fractional indices into surds ☐ Change negative indices into fractions
FAB 1 ASSESSMENT	
Simultaneous Equations	☐ Write equations from the context of the question ☐ Solve algebraically ☐ Use simultaneous equations to find the coordinate of where two lines meet
Trig Equations & Graphs	☐ Draw and recognise $y = \sin(x)$, $y = \cos(x)$, $y = \tan(x)$ ☐ Draw and recognise $y = a\sin(x)$, $y = a\cos(x)$ ☐ Draw and recognise $y = \sin(ax)$, $y = \cos(ax)$ ☐ Draw and recognise $y = \sin(x) + b$, $y = \cos(x) + b$ ☐ Draw and recognise $y = \sin(x - d)$, $y = \cos(x - d)$ ☐ Draw and recognise a combination of the above ☐ Solve trig equations ☐ Use the Trig Identities
Vectors	☐ Add & subtract 2D & 3D vectors ☐ Write the pathway of a vector ☐ Find the magnitude of a 2D & 3D vector
FAB 2 ASSESSMENT	

What will be taken into consideration when deciding on a teacher-estimated grade for S4 National 5 Mathematics?

- 4 x Internal Assessments each assessing 20% of the course.
- FAB 1 Assessment (Dec) assessing 85% of the course.
- FAB 2 Assessment (Feb/March) assessing 100% of the course.
- Commitment and Quality in class/homework.
- Attendance at Supported Study.