

Maths Stage C Course Outline

| Learning Outcome | Tier | U | E | D | S | M |
|--|--------|---|---|---|---|---|
| Topic 1: Calculations (Core) | | | | | | |
| LO1: To be able to use a method to solve multiplication problems | F | U | E | D | S | M |
| LO2: To be able to use a method to solve division problems | F | U | E | D | S | M |
| LO3: To be able to state a value to a required degree of accuracy <u>incl</u> significant figures | F | U | E | D | S | M |
| Topic 2: Algebra (Core) | | | | | | |
| LO1: TBAT expand brackets and simplify the result | F | U | E | D | S | M |
| LO2: To be able to factorise expressions | F | U | E | D | S | M |
| Topic 3: Fractions (Core) | | | | | | |
| LO1: To be able to use the property of fractional equivalence | F | U | E | D | S | M |
| LO2: To be able to convert between improper fractions and mixed numbers | F | U | E | D | S | M |
| LO3: To be able to add and subtract fractions <u>incl</u> different denominators | F | U | E | D | S | M |
| LO4: To be able to calculate a fraction of an amount | F | U | E | D | S | M |
| End of three topics (1,2 and 3) assessment result | out of | | | | | % |
| Topic 4: Area and Volume (Core) | | | | | | |
| LO1: To be able to calculate area of compound shapes | F | U | E | D | S | M |
| LO2: To be able to derive and use formula for area | F | U | E | D | S | M |
| LO3: To be able to apply the formula for volume of a prism (excluding cylinders) | F | U | E | D | S | M |
| LO4: To be able to convert between units of length and volume e.g. $1\text{cm}^3 = 1\text{ml}$ | F | U | E | D | S | M |
| Topic 5: Percentages (Core) | | | | | | |
| LO1: Calculate a percentage of a quantity using a calculator where appropriate | F | U | E | D | S | M |
| LO2: Express a quantity as a percentage of an amount (with and without calculator) | F | U | E | D | S | M |
| LO3: To be able to state simple decimal and percentage equivalents of mixed and improper fractions | F | U | E | D | S | M |
| LO4: To be able to order and compare fractions, decimals and percentages | F | U | E | D | S | M |
| Topic 6: Algebra (Core) | | | | | | |
| LO1: TBAT interpret simple expressions as function machines | F | U | E | D | S | M |
| LO2: TBAT solve simple equations with integer solutions | F | U | E | D | S | M |
| LO3: TBAT recognise the difference between an equation, formula and identity | F+ | U | E | D | S | M |
| End of three topics (4,5 and 6) assessment result | out of | | | | | % |
| Topic 7: Graphing (Core) | | | | | | |
| LO1: TBAT plot simple graphs of linear functions | F | U | E | D | S | M |
| LO2: TBAT plot simple graphs of quadratic functions e.g. $y = x^2 + a$ | F | U | E | D | S | M |
| Topic 8: Probability (Core) | | | | | | |
| LO1: TBAT identify when events are mutually exclusive and know the sum of these events would be 1 | F | U | E | D | S | M |
| LO2: TBAT estimate the number of events using theoretical probability | F | U | E | D | S | M |
| Topic 9: Angles (Core) | | | | | | |
| LO1: TBAT calculate angles in parallel lines | F | U | E | D | S | M |
| End of three topics (7,8 and 9) assessment result | out of | | | | | % |
| End of Stage C assessment result | out of | | | | | % |

Maths Stage D Course Outline

| Learning Outcome | Tier | U | E | D | S | M |
|--|--------|---|---|---|---|---|
| Topic 1: Fractions (Core) | | | | | | |
| LO1: To be able to add and subtract fractions with mixed numbers | F | U | E | D | S | M |
| Topic 2: 2D Shape (Core) | | | | | | |
| LO1: To be able to identify and state using mathematical notation horizontal, vertical, parallel and perpendicular lines | F | U | E | D | S | M |
| LO2: To be able to describe quadrilaterals using their properties | F | U | E | D | S | M |
| LO3: To be able to identify any congruent shapes and prove for simple shapes | F | U | E | D | S | M |
| Topic 3: Circles (Core) | | | | | | |
| LO1: To be able to name parts of a circle | F | U | E | D | S | M |
| LO2: To be able to know and use the formula for the circumference of a circle | F/F+ | U | E | D | S | M |
| LO3: To know and be able to use the formula for the area of a circle | F | U | E | D | S | M |
| End of three topics (1,2 and 3) assessment result | out of | | | | | % |
| Topic 4: Scatter Graphs | | | | | | |
| LO1: To be able to construct scatter graphs | F | U | E | D | S | M |
| LO2: To be able to interpret scatter graphs | F+ | U | E | D | S | M |
| Topic 5: Calculations (Core) | | | | | | |
| LO1: To be able to use BIDMAS to solve calculations with squares and 3 operations | F | U | E | D | S | M |
| LO2: To be able to understand the effect of multiplying or dividing by a number between 0 & 1 | F | U | E | D | S | M |
| Topic 6: Percentages | | | | | | |
| LO1: To be able to express a quantity as a percentage of an amount with a calculator | F | U | E | D | S | M |
| LO2: To be able to calculate % increase/decrease without a calculator | F | U | E | D | S | M |
| LO3: To be able to calculate % increase/decrease using a multiplier | F | U | E | D | S | M |
| End of three topics (4,5 and 6) assessment result | out of | | | | | % |
| Topic 7: Graphing (Core) | | | | | | |
| LO1: To be able to plot conversion graphs in various contexts | F | U | E | D | S | M |
| LO2: To be able to plot and interpret graphs of real life situations | F | U | E | D | S | M |
| Topic 8: Algebra (Core) | | | | | | |
| LO1: TBAT substitute into formulae (incl quadratics) | F | U | E | D | S | M |
| LO2: TBAT rearrange simple formulae | F | U | E | D | S | M |
| LO3: TBAT plot quadratic graphs in the form $y=ax^2+bx+c$ ($a = +/-$) | F | U | E | D | S | M |
| Topic 9: Angles (Core) | | | | | | |
| LO1: To be able to calculate internal and external angles of regular polygons | F | U | E | D | S | M |
| Topic 10: Probability (Core) | | | | | | |
| LO1: To be able to construct and use sample space diagrams | F | U | E | D | S | M |
| LO2: To be able to construct and use Venn diagrams | F | U | E | D | S | M |
| LO3: To be able to construct and use frequency tables | F | U | E | D | S | M |
| End of four topics (7,8,9 and 10) assessment result | out of | | | | | % |
| End of Stage D assessment result | out of | | | | | % |

Maths Stage E Course Outline

| Learning Outcome | Tier | U | E | D | S | M |
|--|--------|---|---|---|---|---|
| Topic 1: Fractions (Core) | | | | | | |
| LO1: To be able to multiply fractions | F | U | E | D | S | M |
| LO2: To be able to divide fractions | F | U | E | D | S | M |
| Topic 2: Percentages (Core) | | | | | | |
| LO1: To be able to calculate percentage change | F | U | E | D | S | M |
| LO2: To be able to calculate successive percentages | F+ | U | E | D | S | M |
| Topic 3: Bearings | | | | | | |
| LO1: To be able to measure and use bearings to describe direction | F | U | E | D | S | M |
| LO2: To be able to calculate bearings | F | U | E | D | S | M |
| End of three topics (1,2 and 3) assessment result | out of | | | | | % |
| Topic 4: Probability (Core) | | | | | | |
| LO1: To be able to calculate the probability of successive independent events | F+ | U | E | D | S | M |
| LO2: To be able to use and apply an understanding of experimental probability | F/F+ | U | E | D | S | M |
| Topic 5: Averages and spread | | | | | | |
| LO1: To be able to interpret the averages and spread of data sets | F | U | E | D | S | M |
| LO2: To be able to calculate averages from frequency tables (not grouped) | F | U | E | D | S | M |
| Topic 6: Pie charts | | | | | | |
| LO1: To be able to construct pie charts | F | U | E | D | S | M |
| LO2: To be able to interpret pie charts | F | U | E | D | S | M |
| End of three topics (4,5 and 6) assessment result | out of | | | | | % |
| Topic 7: Area and volume (Core) | | | | | | |
| LO1: To be able to calculate lengths and areas of parts of circles | F | U | E | D | S | M |
| LO2: To be able to calculate the volume of a cylinder | F | U | E | D | S | M |
| LO3: To be able to calculate the surface area of a cuboid | F | U | E | D | S | M |
| Topic 8: Ratio and proportion (Core) | | | | | | |
| LO1: To be able to use knowledge of direct proportion to solve problems in context (unitary) | F | U | E | D | S | M |
| LO2: To be able to use knowledge of indirect proportion to solve problems in context (unitary) | F | U | E | D | S | M |
| LO3: To be able to divide a quantity into two or more parts and solve problems involving ratio | F | U | E | D | S | M |
| Topic 9: Properties of numbers (Core) | | | | | | |
| LO1: To be able to use prime factors | F | U | E | D | S | M |
| LO2: To be able to find the HCF and LCM of two numbers using Venn diagrams | F | U | E | D | S | M |
| End of three topics (7,8 and 9) assessment result | out of | | | | | % |
| End of Stage E assessment result | out of | | | | | % |

Maths Stage F Course Outline

| Learning Outcome | Tier | U | E | D | S | M |
|---|--------|---|---|---|---|---|
| Topic 1: Fractions (Core) | | | | | | |
| LO1: To be able to calculate BIDMAS problems with fractions incl. negative and mixed numbers | F | U | E | D | S | M |
| Topic 2: Sequences | | | | | | |
| LO1: To be able to find and apply the nth term of a linear sequence | F | U | E | D | S | M |
| LO2: To be able recognise and continue geometric sequences r^n where n is an integer and r is a rational number | F | U | E | D | S | M |
| Topic 3: Averages and spread | | | | | | |
| LO1: To be able to calculate averages and spread from grouped frequency tables | F | U | E | D | S | M |
| End of three topics (1,2 and 3) assessment result | out of | | | | | % |
| Topic 4: Time Series Data | | | | | | |
| LO1: To be able to interpret tables for time series data | F+ | U | E | D | S | M |
| LO2: To be able to construct and interpret tables for time series graphs | F+ | U | E | D | S | M |
| Topic 5: Constructions | | | | | | |
| LO1: To be able to construct a triangle ($\pm 1\text{mm}$, $\pm 2^\circ$) | F+ | U | E | D | S | M |
| LO2: To be able to use straight edge and compasses to draw lines accurately | F+ | U | E | D | S | M |
| LO3: To be able to find the locus of a point that moves according to a rule | F+ | U | E | D | S | M |
| Topic 6: Transformations | | | | | | |
| LO1: To be able to state the order of rotational symmetry | F | U | E | D | S | M |
| LO2: To be able to transform a shape where the image is congruent to the object | F | U | E | D | S | M |
| LO3: To be able to describe a transformation where the image is congruent to the object | F | U | E | D | S | M |
| End of three topics (4,5 and 6) assessment result | out of | | | | | % |
| Topic 7: Algebra (Core) | | | | | | |
| LO1: TBAT expand double brackets and simplify the result | F+ | U | E | D | S | M |
| Topic 8: Enlargements | | | | | | |
| LO1: To be able to enlarge a shape (incl fractional and negative scale factors) | F/F+/H | U | E | D | S | M |
| Topic 9: Units of measure and dimensions | | | | | | |
| LO1: To be able to convert between metric units for dimensions | F | U | E | D | S | M |
| LO2: To be able to use compound measures in calculation | F+ | U | E | D | S | M |
| Topic 10: 3D Shape | | | | | | |
| LO1: To be able to draw and interpret a 2D representation of a 3D shape | F | U | E | D | S | M |
| End of four topics (7,8,9 and 10) assessment result | out of | | | | | % |
| End of Stage F assessment result | out of | | | | | % |

Maths Stage G Course Outline

| Learning Outcome | Tier | U | E | D | S | M |
|--|--------|---|---|---|---|---|
| Topic 1: Indices | | | | | | |
| LO1: To be able to know and use the laws of indices, with integer indices | F+ | U | E | D | S | M |
| LO2: To be able to know and use the laws of indices, with fractional indices | F+ | U | E | D | S | M |
| Topic 2: Solving equations and inequalities (Core) | | | | | | |
| LO1: TBAT solve equations with unknowns on both sides including brackets | F+ | U | E | D | S | M |
| LO2: TBAT solve a quadratic equation by factorising where $a = 1$ | F+ | U | E | D | S | M |
| LO3: TBAT solve inequalities and express the solution in the required form | F+ | U | E | D | S | M |
| Topic 3: Pythagoras' Theorem | | | | | | |
| LO1: To be able to use Pythagoras' theorem in right-angled triangles (2D problems) | F+ | U | E | D | S | M |
| LO2: To apply Pythagoras' theorem in context | F+ | U | E | D | S | M |
| End of three topics (1,2 and 3) assessment result | out of | | | | | % |
| Topic 4: Surface Area (Core) | | | | | | |
| LO1: To be able to calculate the surface area of a cuboid | F+ | U | E | D | S | M |
| LO2: To know and be able to apply the formulae to calculate the surface area of prisms | F+ | U | E | D | S | M |
| LO3: To know and be able to apply the formulae to calculate the surface area of pyramids and cones | F+ | U | E | D | S | M |
| LO4: To know and be able to apply the formulae to calculate the surface area of spheres | F+ | U | E | D | S | M |
| LO5: TBAT calculate surface area of composite solids | F+ | U | E | D | S | M |
| Topic 5: Volume (Core) | | | | | | |
| LO1: To be able to know and apply the formulae to calculate the volume of a pyramids and cones | F+ | U | E | D | S | M |
| LO2: To be able to know and apply the formulae to calculate the volume of a sphere | F+ | U | E | D | S | M |
| LO3: To be able to calculate the volume of composite solids | F+ | U | E | D | S | M |
| Topic 6: Standard Form | | | | | | |
| LO1: To be able to express very big and very small numbers in a more efficient way | F | U | E | D | S | M |
| LO2: To be able to solve problems calculating with numbers expressed in standard form | F | U | E | D | S | M |
| End of three topics (4,5 and 6) assessment result | out of | | | | | % |
| Topic 7: Probability (Core) | | | | | | |
| LO1: To be able to calculate the probability of successive dependent events (not replacing) | F | U | E | D | S | M |
| Topic 8: Straight Line Graphs (Core) | | | | | | |
| LO1: TBAT solve problems involving straight line knowing the general form $y = mx + c$ | F+ | U | E | D | S | M |
| End of two topics (7 and 8) assessment result | out of | | | | | % |
| End of Stage F assessment result | out of | | | | | % |

Maths Stage H Course Outline

| Learning Outcome | Tier | U | E | D | S | M |
|--|--------|---|---|---|---|---|
| Topic 1: Graphing (Core) | | | | | | |
| LO1: TBAT interpret and sketch graphs of quadratics | F+ | U | E | D | S | M |
| LO2: TBAT plot and interpret graphs of cubics | F+ | U | E | D | S | M |
| LO3: TBAT plot and interpret graphs of the reciprocal function | F+ | U | E | D | S | M |
| LO4: TBAT interpret and sketch graphs of real life graphs | F+ | U | E | D | S | M |
| Topic 2: Trigonometry | | | | | | |
| LO1: To know and use the trigonometric ratios SOH/CAH/TOA in right angled triangles | F+ | U | E | D | S | M |
| LO2: To be able to apply the trigonometric ratios in context | F+ | U | E | D | S | M |
| LO3: To know the exact values of the trigonometric ratios | F+ | U | E | D | S | M |
| End of three topics (1,2 and 3) assessment result | out of | | | | | % |
| Topic 3: Shape (Core) | | | | | | |
| LO1: To be able to use congruence and similarity | F+ | U | E | D | S | M |
| LO2: To be able to calculate the volume of frustums | F+ | U | E | D | S | M |
| Topic 4: Simultaneous Equations (Core) | | | | | | |
| LO1: To be able to solve simultaneous equations with unknowns on both sides, including brackets | F+ | U | E | D | S | M |
| Topic 5: Percentages (Core) | | | | | | |
| LO1: To be able to use percentages to calculate growth and decay | F/F+ | U | E | D | S | M |
| Topic 6: Vectors | | | | | | |
| LO1: Solve simple geometrical problems in 2-D using vectors, including use of the commutative and associative properties of vector addition. | F | U | E | D | S | M |
| End of three topics (4,5 and 6) assessment result | out of | | | | | % |
| End of Stage H assessment result | out of | | | | | % |

Maths Stage I Course Outline

| Learning Outcome | Tier | U | E | D | S | M |
|--|--------|---|---|---|---|---|
| Topic 1: Algebraic fractions and solving equations | | | | | | |
| LO1: To be able to simplify algebraic fractions using factorisation | H | U | E | D | S | M |
| LO2: To be able to solve fractions with fractional coefficients | H | U | E | D | S | M |
| LO3: To be able to solve equations with iteration | H | U | E | D | S | M |
| Topic 2: Venn diagrams | | | | | | |
| LO1: To be able to use set notation to define sets | H | U | E | D | S | M |
| LO2: To be able to draw Venn diagrams | H | U | E | D | S | M |
| LO3: To be able to use and define intersection, union, complements and subsets | H | U | E | D | S | M |
| Topic 3: Inequalities | | | | | | |
| LO1: To be able to solve inequalities in two variables graphically | H | U | E | D | S | M |
| LO2: To be able to solve quadratic inequalities graphically | H | U | E | D | S | M |
| End of three topics (1,2 and 3) assessment result | out of | | | | | % |
| Topic 4: Geometry and trigonometry | | | | | | |
| LO1: To be able to find lengths, angles and areas in non- right angles triangles | H | U | E | D | S | M |
| LO2: To be able to use Pythagoras' Theorem, trigonometric ratios and formulae in 3D | H | U | E | D | S | M |
| Topic 5: Simultaneous equations | | | | | | |
| LO1: To be able to solve simultaneous equations where one is quadratic and the other is linear | H | U | E | D | S | M |
| Topic 6: Exponential functions | | | | | | |
| LO1: To be able to plot, sketch and recognise graphs involving exponential functions | H | U | E | D | S | M |
| LO2: To be able to interpret and solve problems involving exponential functions | H | U | E | D | S | M |
| End of three topics (4,5 and 6) assessment result | out of | | | | | % |
| Topic 7: Graphing | | | | | | |
| LO1: To be able to solve problems involving the equation of a circle | H | U | E | D | S | M |
| LO2: To be able to recognise, sketch and interpret the graphs of the trigonometric functions | H | U | E | D | S | M |
| Topic 8: Functions | | | | | | |
| LO1: To be able to find the inverse of a function using the correct notation | H | U | E | D | S | M |
| LO2: To be able to find composite functions | H | U | E | D | S | M |
| LO3: To be able to transform graphs of functions | H | U | E | D | S | M |
| Topic 9: Bounds | | | | | | |
| LO1: To be able to state maximum and minimum values as a result of rounding and interpret limits of accuracy | H | U | E | D | S | M |
| LO2: To be able to use upper and lower bounds in calculations | H | U | E | D | S | M |
| End of three topics (7,8 and 9) assessment result | out of | | | | | % |
| Topic 10: Similar shapes | | | | | | |
| LO1: To be able to use scale factors and ratios of lengths in calculations involving area | H | U | E | D | S | M |
| LO2: To be able to use scale factors and ratios of lengths in calculations involving volume | H | U | E | D | S | M |
| Topic 11: Vectors | | | | | | |
| LO1: To be able to solve problems using vector geometry | H | U | E | D | S | M |
| Topic 12: Graphs for composite measures | | | | | | |
| LO1: To be able to solve problems involving graphs for displacement, velocity and acceleration | H | U | E | D | S | M |
| LO2: To be able to solve problems involving gradients of chords and tangents | H | U | E | D | S | M |
| Topic 13: Quadratic sequences | | | | | | |
| LO1: To be able to find the nth term of a quadratic sequence | H | U | E | D | S | M |
| LO2: To be able to use and interpret more complex geometric sequences e.g. ar^{n-1} where r is a surd | H | U | E | D | S | M |
| End of four topics (10,11,12 and 13) assessment result | out of | | | | | % |
| End of Stage I assessment result | out of | | | | | % |

Maths Stage J Course Outline

| Learning Outcome | Tier | U | E | D | S | M |
|--|--------|---|---|---|---|---|
| Topic 1: Calculations | | | | | | |
| LO1: To be able to BIDMAS involving 3 operations and mixed fractions, negatives and brackets | H | U | E | D | S | M |
| LO2: To be able to change recurring decimals to fractions and vice versa | H | U | E | D | S | M |
| Topic 2: Indices and surds | | | | | | |
| LO1: To know and use the laws of indices with fractional indices | H | U | E | D | S | M |
| LO2: To know and use the laws for surds | H | U | E | D | S | M |
| LO3: To be able to rationalise the denominator | H | U | E | D | S | M |
| Topic 3: Algebra | | | | | | |
| LO1: To be able to expand brackets | H | U | E | D | S | M |
| LO2: To be able to factorise quadratics where the coefficient of the x^2 term is not 1 or -1 | H | U | E | D | S | M |
| LO3: To be able to solve quadratic equations using an appropriate strategy | H | U | E | D | S | M |
| End of three topics (1,2 and 3) assessment result | out of | | | | | % |
| Topic 4: Representing data | | | | | | |
| LO1: To be able to construct and interpret histograms with unequal class widths | H | U | E | D | S | M |
| LO2: To be able to find the interquartile range and use it to compare data sets | H | U | E | D | S | M |
| LO3: To be able to construct, interpret and compare box plots | H | U | E | D | S | M |
| LO4: To be able to interpret and construct cumulative frequency diagram | H | U | E | D | S | M |
| Topic 5: Trigonometry | | | | | | |
| LO1: To know and apply the sine rule to find unknown lengths and angles | H | U | E | D | S | M |
| LO2: To know and apply the cosine rule to find unknown lengths and angles | H | U | E | D | S | M |
| LO3: To know and apply area = $\frac{1}{2}ab\sin C$ | H | U | E | D | S | M |
| LO4: To be able to calculate the area, sides and angles of any triangle | H | U | E | D | S | M |
| Topic 6: Formulae | | | | | | |
| LO1: To be able to change the subject of a formula where the variable appears twice | H | U | E | D | S | M |
| End of three topics (4,5 and 6) assessment result | out of | | | | | % |
| Topic 7: Circles | | | | | | |
| LO1: To be able to prove and solve problems involving the angle properties of circles | H | U | E | D | S | M |
| LO2: To be able to solve problems involving tangents and chords | H | U | E | D | S | M |
| Topic 8: Proportion | | | | | | |
| LO1: To be able to form and evaluate a formula which models a direct proportion relationship | H | U | E | D | S | M |
| LO2: To be able to form and evaluate a formula which models an indirect proportion relationship | H | U | E | D | S | M |
| LO3: To be able to solve mixed proportion problems | H | U | E | D | S | M |
| LO4: Identify, sketch and construct the graphs of direct and indirect relationships | H | U | E | D | S | M |
| Topic 9: Probability | | | | | | |
| LO1: To be able to calculate non-conditional probability using a variety of methods to sort data | H | U | E | D | S | M |
| LO2: To be able to interpret conditional probability | H | U | E | D | S | M |
| End of three topics (7,8 and 9) assessment result | out of | | | | | % |
| Topic 10: Functions | | | | | | |
| LO1: To be able to use function notation to find a numerical solution | H | U | E | D | S | M |
| Topic 11: Graphing | | | | | | |
| LO1: To be able to solve problems involving perpendicular and parallel lines | H | U | E | D | S | M |
| LO2: To be able to sketch graphs of quadratics after completing the square | H | U | E | D | S | M |
| End of two topics (10 and 11) assessment result | out of | | | | | % |
| End of Stage J assessment result | out of | | | | | % |