

Learning Programme – Mathematics – 2nd Year

Topic/ Content	Objectives/Skills	Homework	Assessment	Success Criteria (for E/S/D at KS3)	Stretch & Challenge (Thirst for Learning)
	Michaelmas First Half Term				
Data 1	<p>Describe, interpret and compare observed distributions of a single variable involving discrete, continuous and grouped data through appropriate measures of central tendency (mean, mode, median) and spread (range, consideration of outliers).</p> <p>Understand the handling data cycle, collecting data and designing questionnaires.</p> <p>Describe, interpret and compare observed distributions of a single variable through appropriate graphical representation involving discrete, continuous and grouped data.</p> <p>Construct and interpret appropriate tables, charts, and diagrams, including frequency tables, bar charts, pie charts, and pictograms for categorical data, stem-and-leaf diagrams, and vertical line (or bar) charts for ungrouped and grouped numerical data.</p> <p>Describe simple mathematical relationships between two variables (bivariate data) in observational and experimental contexts and illustrate using scatter graphs.</p>	Students will be set regular homework that is either teacher marked, peer marked, self-marked or computer marked.	<p>Half Term Test (week before October half-term)</p> <p>Two to three teacher marked pieces of homework will be set each half-term.</p>	<p>Mainly determined from Half-Term test, however, class work & homework may also be used.</p> <p>Grade boundaries for E, S & D dependent on overall scores across the year group.</p>	Students will be challenged using extension questions on the topics they are studying, designed to further develop their ability to solve multi-staged problems.

Topic/ Content	Objectives/Skills	Homework	Assessment	Success Criteria (for E/S/D at KS3)	Stretch & Challenge (Thirst for Learning)
	Michaelmas Second Half Term				
Number 1	<p>Multiplying and divide by powers of 10</p> <p>Understand the effects of multiplying and dividing by numbers between 0 and 1.</p> <p>Use a calculator and other technologies to calculate results accurately and then interpret them appropriately.</p> <p>Round numbers and measures to an appropriate degree of accuracy [for example, to a number of decimal places or significant figures] and use to make estimates.</p> <p>Interpret percentages and percentage changes as a fraction or a decimal, interpret these multiplicatively and work with percentages greater than 100%.</p> <p>Solve problems involving percentage change, including: percentage increase, decrease and original value problems and simple interest in financial mathematics.</p> <p>Understand that a multiplicative relationship between two quantities can be expressed as a ratio or a fraction.</p> <p>Relate the language of ratios and the associated calculations to the arithmetic of fractions and to linear functions.</p> <p>Solve problems involving direct and inverse proportion.</p>	Students will be set regular homework that is either teacher marked, peer marked, self-marked or computer marked.	<p>Half Term Test (two weeks before Christmas holiday)</p> <p>Two to three teacher marked pieces of homework will be set each half-term.</p>	<p>Mainly determined from Half-Term test, however, class work & homework may also be used.</p> <p>Grade boundaries for E, S & D dependent on overall scores across the year group.</p>	Students will be challenged using extension questions on the topics they are studying, designed to further develop their ability to solve multi-staged problems.

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	Lent Term				
Algebra 1	<p>Simplify and manipulate algebraic expressions to maintain equivalence by expanding products of two or more binomials.</p> <p>Use algebraic methods to solve linear equations in one variable (including all forms that require rearrangement).</p> <p>To form and solve inequalities.</p> <p>Understand and use standard mathematical formulae; rearrange formulae to change the subject.</p> <p>Form and solve simultaneous equations.</p> <p>Use linear graphs to find approximate solutions of simultaneous linear equations.</p>	Students will be set regular homework that is either teacher marked, peer marked, self-marked or computer marked.	<p>Half Term Test (two weeks before break up for Easter)</p> <p>Two to three teacher marked pieces of homework will be set each half-term.</p>	<p>Mainly determined from Half-Term test, however, class work & homework may also be used.</p> <p>Grade boundaries for E, S & D dependent on overall scores across the year group.</p>	Students will be challenged using extension questions on the topics they are studying, designed to further develop their ability to solve multi-staged problems.
Shape 1	<p>Derive and use the standard ruler and compass constructions (perpendicular bisector of a line segment, constructing a perpendicular to a given line from/at a given point, bisecting a given angle); recognise and use the perpendicular distance from a point to a line as the shortest distance to the line.</p> <p>Identify properties of, and describe the results of, translations, rotations, reflections and enlargements applied to given figures. Identify reflection and rotation symmetry.</p> <p>Use the properties of faces, surfaces, edges and vertices of cubes, cuboids, prisms, cylinders, pyramids, cones and spheres to solve problems in 3-D.</p> <p>Calculate the volume and surface area of prisms (and cylinders).</p>				

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	Trinity Term				
Algebra 2	<p>Reduce a given linear equation in two variables to the standard form $y = mx + c$; calculate and interpret gradients and intercepts of graphs of such linear equations numerically, graphically and algebraically.</p> <p>Recognise, sketch and produce graphs of linear and quadratic functions of one variable with appropriate scaling, using equations in x and y and the Cartesian plane.</p> <p>Interpret mathematical relationships both algebraically and graphically.</p> <p>Use linear and quadratic graphs to estimate values of y for given values of x and vice versa.</p>	Students will be set regular homework that is either teacher marked, peer marked, self-marked or computer marked.	<p>End of Year Exam (close to May Half-Term), on all topics covered up to that point.</p> <p>Two to three teacher marked pieces of homework will be set each half-term.</p>	<p>Mainly determined from End of Year Exam, however, Half-Term tests, class work & homework may also be used.</p> <p>Grade boundaries for E, S & D dependent on overall scores across the year group.</p>	Students will be challenged using extension questions on the topics they are studying, designed to further develop their ability to solve multi-staged problems.
Shape 2	<p>Recognise congruent and similar shapes. Know and use the criteria for congruence and similarity of triangles. Use scale factors, scale diagrams and maps. Interpret scale drawings.</p> <p>Apply angle facts, triangle congruence, similarity and properties of quadrilaterals to derive results about angles and sides, including Pythagoras' Theorem, and use known results to obtain simple proofs.</p> <p>Use compound units such as speed, unit pricing and density to solve problems.</p>				