

Maths Key Stage 3 Programme of Study



Year 7	Introductory project: Spirals	Number 2: Fractions, decimals and percentages	Geometry & Measure 2: Lines & angles	Algebra 3: Special sequences & line graphs	Algebra 4	Number 5
	Students will engage in a investigative and enjoyable project into maths in the world around them. This will include looking at spirals and sequences in the natural world	Students will learn about Fractions, decimals, percentages, adding and subtracting fractions and proportion and equivalence. <i>Thinking Maths 4</i>	Students will look at coordinates and geometrical reasoning: lines, angles and shapes. <i>Thinking Maths 7</i>	Students will learn about square numbers and roots, triangle numbers, from mappings to graphs and how to name linear graphs	Equations and formulae continued! Students will be expected to solve “brick wall” problems, solve square-and-circle and triangle-and-circle problems.	Students will learn about calculator methods, fractions of quantities, adding and subtracting decimals and percentages of quantities.
	Algebra 1: Sequences	Algebra 2: Functions and equations	Number & Measures 3	Geometry & Measure 3: Angles & constructions	Geometry & Measure 4	Algebra 5
	Sequences & functions. Students will look at sequences and rules, missing terms, functions and mappings, using letters in equations and the <i>n</i> th term. <i>Thinking Maths 2: Text n Talk</i>	This topic will involve students using algebraic terms and expressions, learning the rules of algebra, equations, how they can be simplified and formulae.	Students will look further into number and measures, including place value, calculations, calculator methods, rounding, the four operations and BODMAS	Students will delve deeper into geometrical reasoning: lines, measuring and drawing angles and constructing shapes.	Students begin to look at the concept of symmetry. This leads to learning about 3 transformations; reflections, rotations and translations. <i>Students will present ICT work on transformations.</i>	Students will be solving equations, using and writing formulae, carrying out doty investigations into perimeter and area, and constructing graphs that satisfy linear rules and accurately represent real life situations.
	Number 1: Integers & decimals	Statistics 1 & 2: Averages & grouped data	Investigation: Consecutive sums	Number 4: Percentages and ratio	Statistics 3	Geometry & Measure 5
	Students will learn about decimal notations and place values, directed numbers, integers and calculations, including estimations and approximations.	Students will look at averages, use statistical diagrams (bar chart, line graph and pie charts) and probability. They will collect, use and group data. ‘Average student’ ICT project.	Students will use their numerical and algebraic skills to investigate ‘Consecutive sums’	Students will look further into number. They will learn about, percentages, ratio and proportion, calculating ratios and proportions and using this in a problem solving context.	More statistics – including a deeper look at pie charts, comparing data, surveys and probabilities from two way tables.	Students will be introduced to the properties of irregular and regular polygons. Students will then carry out practical work using tessellations before finally making their own 3-D shapes.
	Geometry and Measures 1 : Area & Volume	‘Average student’ ICT project.	Project on Control: Design a Scratch Game!	Investigation: Frogs		End of year test & Final Project
Students will look at length, perimeter and the estimation and calculation of area for a variety of shapes.	Students will use their statistical and numerical skills to collect , use and present information on the ‘average student’	Students will use game writing software to write a programme and design a computer game.	Student will play and investigate the number of moves to win the famous frogs and lily pads game.		Final assessment of year	
ICT	Modelling-Areas spreadsheet investigation	Data-‘The average student’	Control-Project: Design a computer game with Scratch	Data: Drawing graphs	Presentation: Transformations poster	Presentation: Tessellation project
Year 8	Year 8 introductory project: Networks and Topology	Handling Data 1: Probability	Geometry & Measures 2: Perimeter, area and volume	Geometry & Measure 3: Transformations	Number 4: Solving problems	Geometry & measures 4: Scale drawing, bearings
	Students will research the Maths of Networks, invented by Euler, and its links to Topology, the ‘elastic’ geometry with surprising properties to be discovered.	Students will use a probability scale, calculate probabilities and study experimental probability.	Students will calculate areas of shapes, volumes of prisms and convert between metric and imperial units.	Students will learn how to recognise congruent shapes and to transform 2-D shapes by combinations of reflections, rotations, translations and enlargements.	Students will use BODMAS, fractions, decimals and percentages to solve complex problems	Students will draw plans and elevations, find the circumference and area of a circle, use bearings and solve problems using 3D solids.
	Number & Algebra 1: Negatives, factors, sequences	Number 2: Fractions and Decimals	Algebra 3: Functions and Graphs	Algebra 4: Equations	Algebra 5: Equations and formulae	Statistics 3: Comparing distributions
	Students will learn how to multiply and divide negative numbers, how to find HCF’s, LCM’s and Prime factors, and how to generate and describe number patterns. <i>Thinking Maths 13: Chocolate box (1 lesson)</i>	Students will work with fractions, percentages and decimals including adding and subtracting fractions and solving percentage problems. <i>Thinking Maths 15: Circle functions (1 lesson)</i>	Students will draw mapping diagrams and identify functions. They will study lines and travel graphs. <i>Thinking Maths 17</i>	Students will learn to solve more difficult equations, how to substitute into a formula and how to create their own expressions and formulae. <i>Thinking Maths 21: Expressions & equations Investigation: T-totals (3 lessons)</i>	Students will use brackets, construct and solve linear equations, and change the subject of a formula. <i>Magic Squares investigation</i>	Students will calculate statistics from given data, compare distributions, construct frequency diagrams and line graphs and compare probabilities. <i>Thinking Maths</i>
Geometry & Measure 1: Angles and Constructions	Algebra 2: Manipulating algebraic expressions	Number 3: Rounding, estimating and powers of 10	Statistics 2: Charts and diagrams	Solving Problems	End of year project: Design and cost an ideal bedroom	
Students will work on measuring, drawing and calculating angles in shapes and on parallel lines. They will study properties of quadrilaterals and how to construct accurately. <i>Thinking Maths 14: Tents (1 lesson)</i>	Students will simplify expressions and use brackets and index notation. <i>Thinking Maths 16: 3 dice (1 lesson)</i>	Students will learn how to multiply and divide by powers of ten, how to round numbers to decimal places, and to use a calculator efficiently <i>Thinking Maths 18.</i>	Students will learn how to read and display information on a range of charts and diagrams <i>Thinking Maths 19</i>	Students will investigate numerical problems. They will identify important information, interpret graphs, divide into ratios and use examples to disprove statements <i>Thinking Maths.</i>		

ICT	Control: Create polygons with Logo	Presentation: Design a lesson to explain number properties.	Modelling: Explore mappings, tables and graphs	Data: Investigation into correlation.	Modelling: Use spreadsheets to solve problems.	Presentation: Design a bedroom project
Year 9	Introductory project:	Geometry & Measures 1: Angles, construction and Pythagoras	Algebra 3: Equations, formulae and identities	Algebra 4: Powers of x	Statistics 3: Data investigation	Solving Problems and revision
	'Play to win' Students will study the mathematics of strategy games	Students will use Pythagoras' Theorem, and study loci, polygons. They will look at the difference between a demonstration and a proof.	Students will construct and solve different types of linear equation, use trial and improvement and solve problems involving direct proportion.	Students will interpret negative powers (and fractional powers). They will construct graphs involving powers of x.		Student will recap problems on number, algebra, shape and statistics.
	Number 1: Ratio & proportion	Algebra 1&2: Sequences	Geometry and measures 2: Volumes of cylinders	Statistics 2 : Probability	Algebra 5: Factorisation & manipulation	Geometry & Measure 4 : Shape investigation
	Students will solve problems involving percentages, fractions, ratio and proportion	Students will find the nth term of a sequence and describe sequences from patterns. They will find inverse functions and limits of series.	Students will use formulae for area and circumference of circles, calculate volumes of prisms and convert area and volume units.	Students will interpret statements about probability, solve problems involving mutually exclusive outcomes, may use tree diagrams, and will use relative frequency.	Students will expand and factorise algebraic expressions . They will change the subject of a formula and plot graphs.	Students will work on a project on Trigonometry and mathematical instruments.
	Data Handling 1: Representing Data	Number 2: Standard form and bounds	Connect 4 investigation	Geometry & Measures 3: Enlargement (& Trigonometry)	Statistics 4: Probability investigation	GCSE Preparation (6 lessons)
	Students will use a database to investigate a hypothesis using scatter graphs, time series and cumulative frequency diagrams.	Students will work with powers of ten in standard form, will round numbers and use a calculator efficiently.		Students will enlarge a shape by a negative or fractional scale factor and use symmetry and map scales. Some will use trigonometry.		
ICT	Databases- use a database to investigate traffic accidents	Modelling- use a spreadsheet to investigate sequences	Databases- 'Planetary data' direct proportion relationships (Also Modelling- trial & improvement with spreadsheets.)	Modelling- Simulation in experiments	Presentation- Present results of a data/probability investigation	Presentation- 'Measuring the inaccessible' project