

Mathematics at Key Stage 3 at Cottenham Village College aims to ensure that all students are fluent in the key skills that underpin mathematics and are developing a deep understanding of the key concepts. We encourage students to make connections between different topics and apply their skills to tackle complex and unfamiliar problems.

At Cottenham Village College we routinely use a range of strategies to formatively assess and give feedback to students about their progress. In mathematics these strategies include the use of questioning within the classroom, analysis of students' homework on Sparx maths and half termly assessments which assess both current and prior learning. Students will receive whole an analysis sheet from their assessment and will receive feedback in lessons following the assessment.

Autumn Term (first half)	Addition / Subtraction	Multiplication / Division	Order of Operations
Key subject knowledge	Addition of integers Addition of decimals Subtraction of integers Complex subtraction involving more than two terms Subtraction of decimals Complex subtraction with integers and decimals Working backwards – arithmagons and unknown digits	Multiplication of powers of 10 Multiplication of decimal powers of 10 Column multiplication Decimal multiplication Division calculations Short division – with and without carrying Short division – decimal results Division of decimals	Division / multiplication before addition / subtraction Evaluating from left to right for equivalent priorities Prioritising indices / roots over four operations Prioritising brackets over indices / roots / four operations Prioritising calculations within fractions equivalently to brackets Prioritising calculations within roots equivalently to brackets Inserting brackets to 'group' calculations
Summative assessment strategies	Will be assessed via a written assessment in lessons before October half term.		
How does this unit prepare students for future study?	Key skills that underpin all further units within maths. For example, fluency in order of operations ensures that all supports students to solve equations when they have the introduction to algebra module in term two. By prioritising these at the start of year 7, we ensure that all students are able to access the curriculum as it progresses.		

Autumn Term (second half)	Properties of Integers	FDP	Directed Number
Key subject knowledge	Introducing multiples Finding the lowest common multiple Introducing factors Finding the highest common factor Divisibility tests Basic index notation Squares, cubes and roots Triangular numbers Introduction to prime numbers Prime factorisation	Understanding what a fraction represents Knowing when two fractions are equivalent Converting a fraction to its simplest form Understanding that % means 'parts per 100' Recognise equivalent groups of fractions, decimals and percentages Convert between fractions decimals and percentages Ordering fractions, decimals and percentages	Adding positive and negative numbers Subtracting positive and negative numbers Multiplying positive and negative numbers Dividing positive and negative numbers
Summative assessment strategies	Will be assessed via a written assessment in lessons before the Christmas holiday.		
How does this unit prepare students for future study?	Key skills that underpin all further units within maths. These lead on to future modules, for example a good understanding of fractions and the equivalence of fractions / decimals / percentages, students are able to access the probability module in term three. By prioritising these at the start of year 7, we ensure that all students are able to access the curriculum as it progresses.		

Spring Term (first half)	Introduction to Algebra	2D Shape
Key subject knowledge	Use letters to represent unknown numbers or variables Know the meaning of the words term, expression and equation Simplify linear algebraic expressions by collecting like terms Multiply a single term over a bracket Construct and solve simple linear equations	Classify polygons Identify, visualise, and describe properties of rectangles, triangles and regular polygons Classify triangles and quadrilaterals by their geometric properties Solve geometrical problems using side and angle properties of equilateral, isosceles and right-angled triangles, and special quadrilaterals, explaining reasoning with diagrams and text
Summative assessment strategies	Will be assessed via a written assessment in lessons before February half term.	
How does this unit prepare students for future study?	An introduction to algebra allows students to develop the fluency necessary to solve more complex algebra problems as their education in maths progresses. A good understanding of 2D shape leads on to the angles module in the second half of the term.	

Spring Term (second half)	Angles	Ratio and Proportion
Key subject knowledge	Angles in triangles, quadrilaterals Angles on a straight line Angles around a point Vertically opposite angles	Understand the relationship between ratio and proportion Use direct proportion in simple contexts Use the unitary method to solve direct proportion problems Simplify ratios, including those expressed in different units Share a quantity into a given ratio
Summative assessment strategies	Will be assessed via a written assessment in lessons before the Easter holiday.	
How does this unit prepare students for future study?	Developing an understanding of angles in triangles, quadrilaterals, on a straight line, around a point and vertically opposite angles allows students to access more complex angles problems in year 8, such as angles in parallel lines and angles in polygons with more than four sides. Ratio and proportion underpins a number of different modules that the students will study in future such as percentage change and more complex ratio problems.	

Summer Term (first half)	Probability	Measure, Perimeter and Area
Key subject knowledge	<p>Describe the likelihood of the outcome of an event, including those with equally likely outcomes</p> <p>Understand and use the probability scale from 0 to 1</p> <p>Find and justify probabilities based on equally likely outcomes in simple contexts</p> <p>Identify all the possible mutually exclusive outcomes of a single event</p> <p>Estimate probabilities by recording data in a frequency table</p> <p>Compare experimental and theoretical probabilities</p> <p>Know that the probability of an event occurring plus the probability of an event not occurring is 1</p>	<p>Be able to convert between metric units of length, mass and capacity</p> <p>Choose and use appropriate units of measurement to measure, estimate, calculate and solve problems in every day contexts</p> <p>Calculate the perimeter of a variety of shapes</p> <p>Calculate the area of rectangles</p> <p>Calculate the area of compound shapes that can be split into rectangles</p> <p>Calculate the area of triangles, parallelograms, and trapezia</p> <p>Calculate the area of more complex compound shapes</p>
Summative assessment strategies	Will be assessed via a written assessment in lessons before May half term.	
How does this unit prepare students for future study?	Beginning to understand the concept of probability and the likelihood of an event occurring supports students in their future study of statistics and probability, enabling them to express probability both through words and numbers. The study of measure, perimeter and area facilitates students understanding 2D shape, giving them a solid foundation for studying 3D shapes as they move through KS3, as well as the ability to approach more complex problems within measure in KS4.	

Summer Term (second half)	Graphs and Lines
Key subject knowledge	<p>Read and plot coordinates in all four quadrants</p> <p>Generate coordinate pairs that satisfy a simple linear rule</p> <p>Recognise straight line graphs parallel to the x-axis or y-axis</p> <p>Plot the graphs of linear functions where y is given in terms of x</p> <p>Recognise that equations of the form $y=mx+c$ correspond to straight line graphs</p>
Summative assessment strategies	Will be assessed via a written assessment in lessons before the summer holiday.
How does this unit prepare students for future study?	This unit develops students' understanding of coordinates and graphs, enabling them to make generalisations and see patterns. It links to the unit of sequences which they will study at the start of Year 8, and allows them to study more complex graphs in KS4.

