

Long Term Plan: (Maths) 2022-23

Y e a r 1 0 (M a t h s)	Intent	Students are to be able to “work mathematically” throughout the curriculum by embedding the essential skills of fluency, reasoning and problem solve into each subtopic. Students will now develop the knowledge gain, at Key Stage 3, into more complex and new understanding. Through careful interleaving of topics, students will readily make links between each subtopic, hence strengthening their understanding and mastering the course.
	Assessment strategy	Students will be assessed the three key points throughout the year, the start, halfway through and at the end. These major assessment points will form the composite testing for the year group in form of two full mock exams, all three papers, and Year 10 component test of their learned knowledge to date. This will allow students to see their progress, considering the full GCSE spectrum, from the start of Year 10 to the end and provide teachers with the opportunity to support areas for development more effectively. At the end of each topic students will undertake a component test based solely upon the knowledge they have gained during that topic. This provides both students and teachers with the opportunity to regular evaluate strengths and areas for development on these specific topics.

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		Half Term 1	Half Term 2	Half Ter3m 3	Half Term 4	Half Term 5	Half Term 6
Y e a r 1 0 (M a t h s)	Disci plina ry know ledge	Students should be encouraged throughout to draw sketches or diagrams to help them visualise information. Manipulatives such as a geoboard and pattern blocks could be used to explore enlargements, similarity, and area scale factor.	Students are encouraged to use bar modelling when forming and solving equations. Tracing paper and other manipulatives are to be used to support with student's understating of rotation and translation. Using measuring devices to deduce Pythagoras's theorem.	Students should understand trigonometry as an extension of similar triangles. Drawing and labelling right -angled triangles to represent problems is essential. In addition, they should be able to visualise and sketch diagrams from descriptions. They then build on this with concrete and pictorial representations of 3 -D objects.	Bar models are useful to support the forming of equations and help students to make sense of the approach to a solution. Algebra tiles are also very powerful for this and help to make sense of factorising quadratics, alternate representations are very effective in ensuring all students, including higher attaining, make sense of the mathematical structures.	Using compasses in school may be useful way into bearings. Straws for reminding what happens with parallel and intersecting lines. Creating nets of cylinders and cones is a good way of establishing how to find the formulae for their surface area. Double number lines and ratio tables can be helpful tools to show proportionality. Representations of sample spaces can take the form of lists, two-way tables, grids, Venn diagrams and tree diagrams. Tree diagrams should include those where there are 3 possible outcomes in at least one of the trials.	For all students, bar models and/or number lines will provide a "way in" to the problem-solving questions in this block, helping them to decide whether an additive or multiplicative approach is appropriate, and the choice of operation.

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	Substantive knowledge	Constructing in 2D and 3D: - Construction and congruency Reasoning with number: - Numbers - Using percentages - Maths and money	Reasoning with Algebra: - Deduction - Rotation and translation - Pythagoras' Theorem	Similarity: - Congruency, similarity, and enlargement - Trigonometry	Developing Algebra: - Representing solutions of equations and inequalities - Simultaneous equations	Geometry: - Angles and Bearings - Working with Circles Proportions and Proportional Change: - Ratios and fractions - Probability	Delving into data: - Collecting and representing data Using number: - Non-calculator methods - Types of numbers and sequences
	Justification	National curriculum: - Construct congruent triangles - Solve problems involving percentage change - Set up and solve problems in growth and decay, simple and compound interest - Financial maths	National curriculum: - Apply properties of angles at a point, straight line, vertically opposite and on a parallel line - Describe changes and invariance achieved by a combination of transformations - Apply Pythagoras' theorem to find missing sides and to solve problems	National curriculum: - Trigonometric ratios are to be used to find the missing lengths and angles or right-angled triangles - Know how and when to apply the sine and cosine rule as well as the formulae for the area of a non-right-angled triangle	National curriculum: - Know the difference between an equation and an identity - Solve quadratic equations - Identify and interpret roots - Solve two simultaneous equations in two variables (linear and quadratic forms) - Solve linear inequalities	National curriculum: - Use and interpret bearings - Use ratio notation - Divide in a given ratio - Compound units such as speed, density and pressure - Calculate the probability of independent and dependent events, including conditional at higher	National curriculum: - Describe, interpret and compare variables through graphical representation - Infer properties of populations and distributions - Apply statistics to describe population

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	Key stone vocabulary	Pythagoras Congruent Hypotenuse Inverse	Variable Intersection Simultaneous Elimination	Perpendicular Parallel Radius Diameter Vector Ratio	Unit Gradient Depreciation Compound Intersection Union	Frequency Cumulative Average Outlier Frequency density Distribution	Surd Recurring Sequence Linear Indices Standard form
	Links to prior learning	Y8 proportional reasoning, Y9 geometry.	Y7 algebraic thinking, Y8 algebraic techniques, Y9 algebra.	Y7 lines and angles, Y9 geometry.	Y7 applications, Y7 reasoning with number, Y8 proportional reasoning, Y8 developing number, Y9 probability and statistics.	Y8 representing data, Y8 reasoning with data, Y9 statistics.	Y7 algebraic thinking, Y8 algebraic techniques, Y9 algebra.
	Cross-curricular and careers links			Computer Science – Algebraic Formulae	Computer Science – Algebraic Formulae		PE – Tables, Time & Distance Geography – Double Line and Bar Chart
	Links to future study	Y11 geometry, Y11 ratio.	Y11 algebra.	Y11 geometry.	Y11 probability and statistics, Y11 multiplicative reasoning.	Y11 statistics.	Y11 algebra.

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	Assessment	Baseline Mock Exam Assessment Subtopic component testing on: • Construction and congruency • Numbers • Using percentages • Maths and money	Subtopic component testing on: • Deduction • Rotation and translation • Pythagoras' theorem	Midyear Composite Test Subtopic component testing on: • Congruency, similarity, and enlargement • Trigonometry	Subtopic composite testing on: • Representing solutions of equations and inequalities • Simultaneous equations	Subtopic component testing on: • Angles and bearings • Working with circles • Ratios and fractions • Probability	End of Year Mock Exam Assessment Subtopic component testing on: • Collecting and representing data • Non-calculator methods • Types of numbers
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	Homework	From week one, work in the first two weeks will be a recap from the end of Year 9. From week three, students will begin to revisit the content taught at the start of Year 10 to allow the opportunity for multiple revisiting of the topics. This will include, but not limited to: • Constructions • HCF/LCM • Percentage increase, decrease and reverse percentages • Bank statements • Simple and compound interest	• Percentages recap • Types of angles • Angles around a point/ on a straight line/ parallel lines • Forming and solving equations with angles and algebra • Rotation • Translation	• Pythagoras' theorem • Enlargement • Triangle congruency • Triangle similarity • Find missing lengths of triangles using trigonometry	• Find missing angles of triangles using trigonometry • Solving equations and inequalities • Plotting straight line graphs • Find solutions to straight line graphs • Solving inequalities graphically	• Solving linear and quadratic simultaneous equations •	• Types of data • Types of charts • Averages • Interpreting data • Fractional indices • Rounding • Limits of accuracy • Sequences
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