Rayner Stephens HIGH SCHOOL

Year 9 - Mathematics						
Curriculum intent	Through mathematics lessons we promote mathematical thinking to allow all students to achieve their mathematical potential and engage in the study of mathematics. Using a mastery style approach to develop learners' fluency, reasoning and problem solving through a concrete, pictorial and abstract approaches, building upon their learning from Years 7 and 8 whilst preparing students for their GCSE studies. In the Autumn term, students will begin to consolidate and further their algebraic notation, reasoning and problem skills using algebra and applying this to geometric and contextual problems. Towards the end of the half term, students will commence study of statistic and applying averages. Statistical analysis continues into Autumn term two by linking knowledge to frequency diagrams and selecting and evaluating statistical representations to match purpose and applying this to real-life contexts. To complete the Autumn term, learners will focus on geometry, in particular trigonometry and Pythagoras' Theorem. Increasing their knowledge and understanding of where these concepts come from through representations before applying them in preparation for GCSE Mathematics in years 10 and 11. In the spring term, learners continue with geometry whilst studying transformations whereby they will understand geometric terminology; how this applied to transforming shapes including reflections, translations, rotations and enlargement whilst considering similarity and congruence. Building on from transformations, learners will lead on to supplement their knowledge of proportional reasoning using ratio tables, before moving on to further probability and then constructions. Students will complete the year by completing a GCSE skill-based number rubric focused on selected key skills throughout the GCSE number strand reinforcing what students have learned throughout years 7, 8 and 9.					
Term	**Autumn 1**	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Knowledge	Forming and Solving Equations Averages	Averages and Frequency Tables Trigonometry and Pythagoras' Theorem	Transformations Proportional Reasoning	Proportional Reasoning (cont.) Further Probability	Further Probability (cont.) Constructions	Constructions (cont.) Number: GCSE Bridging Unit

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Skills	• Reinforce basic algebra skills. • Reinforce solving equations in applied contexts. • Understand how to simulate different context using algebra • Link shape properties and understanding to algebraic methods. • Calculate, apply and use averages in multiple contexts and on different examples of frequency graphs.	• Design and interpret different frequency diagrams. • Evaluate statistical diagrams and tools to comment on results. • Explore, understand and apply Pythagorean theorem. • Explore, understand and apply trigonometric ratios. • Being able to understand and apply appropriate methods for finding a length of a side or size of an angle.	• Understand the different types of symmetry and how they are recorded. • Explore the different ways in which an object can be transformed into its image. • Describe the different transformations using the correct mathematical terminology. • Develop sense of proportion and apply to concepts of recipes, currency conversion and best value.	• Use scale factors for length, extending to area and volume, and find lengths on similar shapes. • Formalise proportion understanding to abstract examples using the constant of proportionality • Complete probability diagrams for independent and dependent probabilities of events	• Calculate probabilities for independent and dependent events. • Solve probability problems involving algebraic notation, including algebraic fractions. • Understanding how to use mathematical equipment to make accurate drawings. • Explore the different ways in which triangles and some quadrilaterals can be constructed.	• Understand the notation in which angles and shapes are written. • Divide, simplify and solve problems with ratio • Convert, compare and order fractions decimals and percentages • Calculate using the four operations with fractions and find fractions of an amount. • Find percentage of amounts, increases and decreases and repeated percentage change. • Use and calculate with standard form and surds

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Assessments	End of unit assessment: • Forming and Solving Equations	End of unit assessment: • Averages and Frequency tables • Trigonometry and Pythagoras' Theorem	End of unit assessment: • Transformations	End of unit assessment: • Proportional Reasoning	End of unit assessment: • Further Probability	End of unit assessment: • Constructions End of year assessment.
Enrichment	• Fruity Totals. Can you find the value for each of the fruit? https://nrich.maths.org/fruity • Your number was… (interactive I think of a number quiz) https://nrich.maths.org/7216	• In a newspaper, how many statistics can you find? Consider why they have been used. • Delve deeper into what the Pythagoreans investigated with this article: https://nrich.maths.org/2721	• Find a recipe. Try scaling it up or scaling it down and making it. • Go and look at the rates at a Bureau de Change. What do you notice? How much of each currency can you purchase for £100?	• Using an image of your choice, can you increase or reduce it by a scale factor? You might want to draw it or use a computer. How can you ensure it stays in proportion?	Mixing Lemonade: Can you work out which is stronger? https://nrich.maths.org/6870	• Can you find the exact value? https://nrich.maths.org/620