Year 9 Maths Curriculum Map

Overview	The Scheme of Work in Year 9 builds and extends from Year 8 and prepares the path for starting GCSE. Students will begin to explore and understand many of the practical applications of mathematics through designing and creating surveys, constructing geometric shapes, undertaking and analysing probability experiments and beginning to use trigonometry and Pythagoras' theorem for calculating unknowns in right angled triangles. Students will also develop a greater understanding of how topics relate and intertwine across all the strands.		
Year 9	Autumn 1 & 2	Spring 1 & 2	Summer 1 & 2
Topic	Unit 1: Indices & standard form Unit 2: Expressions & formulae Unit 3: Dealing with data Unit 4: Multiplicative reasoning	Unit 5: Constructions Unit 6: Equations, inequalities & proportionality Unit 7: Circles, Pythagoras & prisms	Unit 8: Sequences & graphs Unit 9: Probability Unit 10: Comparing shapes
Knowledge	Our learners can: Calculate combinations of indices, fractions and brackets. Use index laws to simplify expressions. Estimate answers to calculations. Understand negative and 0 indices. Use powers of 10 and their prefixes. Write large and small numbers using standard form. Enter and read standard form numbers on a calculator. Order numbers written in standard form. Substitute into algebraic expressions involving powers. Write expressions and formulae. Change the subject of a formula. Simplify expressions involving brackets, use rules for indices and factorise expressions. Multiply out double brackets and collect like terms. Identify sources of primary and secondary data. Choose a suitable sample size and what data to collect. Identify factors that may affect data collection and	Our learners can: Use scales on maps and diagrams. Draw diagrams to scale. Make accurate constructions using drawing equipment. Construct accurate triangles. Construct accurate nets of solids involving triangles. Draw loci for the paths of points. Construct and solve equations with the unknown on both sides. Construct and solve equations including brackets, powers and fractions. Convert a recurring decimal to a fraction. Know the difference between equations and identities. Use trial and improvement methods to find solutions to equations. Solve linear inequalities. Represent solutions to inequalities on a number line. Set up equations to show direct proportion. Recognise data sets that are proportional.	Our learners can: Use the nth term to generate a sequence. Find the nth term of a sequence. Recognise and continue geometric sequences. Recognise and continue quadratic sequences. Use distance-time graphs to solve problems. Recognise graphs showing constant rates of change. Interpret graphs showing rates of change. Draw a graph from its equation, without working out points. Write the equation of a line parallel to another line. Compare graph lines using their equations. Plot graphs with equations like $ax + by = c$. Rearrange equations of graphs into $y = mx + c$. Find inverse functions and plot their graphs. Solve simultaneous equations by drawing graphs. Find the equation of a line through two points. Draw graphs with quadratic equations like $y = x^2$. Interpret graphs of quadratic functions. Draw graphs of cubic equations like $y = x^3$. Interpret non-linear graphs. Calculate probabilities from tables. Compare probabilities.

	plan to reduce bias. Design a good questionnaire. Design and use data collection sheets and tables. Find the modal class of a set of grouped data. Estimate the mean form a large set of grouped data. Construct and use a line of best fit to estimate missing values. Identify and explain outliers in data. Construct and use frequency polygons. Write a report to show results of a survey. Enlarge 2D shapes using positive scale factors. Find the centre of enlargement by drawing lines on a grid. Enlarge 2D shapes using negative and fractional scale factors. Understand that the scale factor is the ratio of the lengths of corresponding slides. Find an original value using inverse operations. Calculate percentage change. Solve problems using compound measures, percentage change and rates of change. Solve problems using constant rates and related formulae. Round numbers to a given number of significant figures. Solve problems using percentage change and rates of change. Solve problems using ratio and scale factors.	Use algebra to solve problems involving proportion. Solve a pair of simultaneous equations. Calculate the circumference of a circle. Estimate calculations involving pi. Calculate the area of a circle. Find the length of an unknown side of a right-angled triangle. Solve problems involving right-angled triangles. Calculate the volume and surface area of a right prism. Calculate the volume and surface area of a cylinder. Find the lower and upper bounds for a measurement. Calculate percentage error intervals.	Calculate estimates of probability from experiments or survey results. Use experimental probabilities to predict outcomes. List all the possible outcomes of one or two events in Venn diagrams, tables and sample space diagrams. Compare experimental and theoretical probabilities. Decide if a game is fair. Calculate the probability of two independent events. Use tree diagrams. Use congruent shapes to solve problems about triangles and quadrilaterals. Work out whether shapes are similar, congruent or neither. Solve problems involving similar triangles. Use conventions for naming sides of a right-angled triangle. Work out the tangent of any angle. Use the tangent to work out an unknown side of a triangle. Work out the sine ratio of any angle. Use sine to work out the opposite side in a right-angled triangle. Work out the cosine ratio of any angle. Use the cosine ratio to work out the adjacent side in a right-angled triangle.
Skills	Students will increase their resilience during the course through learning new concepts, using prior knowledge to develop mathematical fluency and applying skills to a variety of situations and problems. Our mathematical activities will have the aim of developing both skills and high aspirations in both this subject and life beyond. Resilience will also be developed within the key maths skills below (fluency, reasoning and problem solving). Students will be given the opportunity to work together to develop and share their ideas on topics, discuss misconceptions and how these topics can be used in real-life situations. Students will develop creativity through a variety of problem solving activities within each topic, working on independent tasks beyond the classroom using HegartyMaths, and apply the key skills (fluency, reasoning and problem solving).		