Striving For Excellence Together
Year 9 Mathematics Curriculum Map

9	Topics	Assessment	Key Concepts	Key Vocabulary	Our Pillars	Knowledge tracking
Topic 1	Reasoning with algebra **Straight line graphs**		Begin to study y = mx + c in abstract and real-life contexts. Gain an understanding of the gradient and intercepts. Finding the equation of a straight line graphs including from real-life graphs. Some will explore real-life graphs involving inverse proportion and perpendicular lines.	Intercept Gradient y-intercept Real life Asymptote Negative Reciprocal	Careers – Maths Why Bother?	**Extension of previous work** Year 8 – Working in the cartesian plane **Future learning** Year 11 Autumn term – Gradients and lines
Topic 2	Reasoning with algebra **Forming and solving equations**		Students revisit their knowledge of solving equations from year 8. New knowledge taught is solving equations and inequalities with unknowns on both sides including when they are in context. Rearranging formula. Some will rearrange complex formula.	Inverse Inequality Equation Coefficient Formula Make the subject of Inverse operation Square / root	Careers – Maths why bother?	**Extension of previous work** Year 8 Spring term – Brackets, equations and inequalities **Future learning** Year 10 Autumn term – Representing solutions of equations and inequalities
Topic 3	Constructing in 2 and 3 dimensions **Three Dimensional shapes**		Knowing the names of 2D and 3D shapes. Sketching and drawing accurate nets of 3D shapes. Find the surface area of cuboids, Prisms, cylinders. Find the volume of any prism, cylinders and some will explore the volume of cones, pyramids and spheres.	Dimensions Face Edge Vertex Prism Net Front/side/plan elevation Surface area Area of face	Careers – Maths why bother?	**Extension of previous work** Year 8 Summer term – Area of trapezia and circles **Future learning** Year 10 Spring term – Working with circles
Topic 4	Constructing in 2 and 3 dimensions **Constructions and congruency**		Use compass and ruler to work with Locus from points and lines. Use a compass to construct perpendicular bisectors and angle bisectors. Identify explore congruent triangles.	Locus Loci Construction lines Equidistant Arc Bisector SSS, SAS, ASA, RHS Congruent Corresponding sides or angles	Careers - Maths, Why bother?	**Extension of previous work** Year 7 – Constructing, measuring and using geometric notation **Future learning** Year 11 – Spring term – Show that… Show that with congruent triangles.
Topic 5	Reasoning with number **Numbers**		This is an opportunity to revisit our formal methods to multiply, divide, add and subtract. All students will solve problems with integers, decimals, and fractions. Some will understand and use surds. Some will revisit standard form and/or Highest common factor and lowest common multiples of numbers.	Integer Irrational Real Surd Sum Product Quotient HCF / LCM Standard form	Careers - Maths, Why bother?	**Extension of previous work** Year 8 – Spring term Standard form Year 8 – Multiplying and dividing fractions **Future learning** Year 10 Spring term – Ratios and fractions Year 10 Summer term – Non-calculator methods

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Topic 6	Reasoning with number **Using percentages**		This is an opportunity to revisit fraction decimal percentage equivalence, Percentage increase and decrease and expressing change as a percentage. New learning focuses on selecting the correct percentage method to solve percentage problems. This includes mental methods and calculator methods. Some will see problems with a repeated percentage change.	Reverse Original Bar Model Power/index Multiplier	Careers – Maths, Why Bother? Financial Mathematics – Life after SWR.	**Extension of previous work** Year 8 – Fractions and percentages **Future learning** Year 9 Spring term – Maths and money Year 10 Spring term – Percentages and interest
Topic 7	Reasoning with number **Maths and money**		Solving problems with bills and bank statements Calculating different types of interest Understanding VAT, Taxes and wages and solving problems relating to them. Finally working with unit pricing and exchange rates.	Debit Credit Expense Deposit Rate Per annum VAT Simple compound Unitary	Careers – Maths, Why Bother? Financial Mathematics – Life after SWR	**Extension of previous work** Year 8 – Fractions and percentages Year 9 – Using percentages **Future learning** Year 10 Spring term – Percentages and interest
Topic 8	Reasoning with geometry **Deduction**		Solve angle problems using chains of reasoning, incorporating all simple rules seen before from primary through to year 9. Make a link to algebraic problems within angle problems. Use the relationships between parallel lines and alternate and corresponding angles.	Alternate Corresponging Co-Interior Transversal Interior Exterior Counterexample	Careers – Maths, Why Bother?	**Extension of previous work** Year 8 Summer term – Angles in parallel lines and polygons **Future learning** Year 10 Spring term – Angles and bearings Year 11 Spring term – Geometric Reasoning
Topic 9	Reasoning with geometry **Rotation and translation**		Compare the differences between rotational and line symmetry. Rotate shapes about points. Translate shapes using vectors.	Rotational Line Symmetry Clockwise Centre Image Object Translate Vector	Careers – Maths, Why Bother?	**Extension of previous work** Year 8 Summer term – Line symmetry and reflection **Future learning** Year 11 Spring term – Transforming and constructing
Topic 10	Reasoning with geometry **Pythagoras' Theorem**		Indroduce Pythagoras' theorem. Use Pythagoras theorem to work out missing sides in right angled triangles and then use it to solve problems. Problems include the use of it on a coordinate grid and within 3D shapes.	Hypotenuse Pythagoras Theorem Square root	Careers – Maths, Why Bother?	**Extension of previous work** Year 7 – Autumn term - Fraction, decimal and percentage equivalence **Future learning** Year 9 – Spring term Using percentages
Topic 11	Reasoning with proportion **Enlargement and similarity**		Enlarge shapes by a positive or positive fractional scale factor. Solve problems with similar shapes. Some will enlarge shapes with a negative scale factor, solve problems with similar triangles and explore ratios in right angles triangles.	Object Image Scale factor Similar	Careers – Maths, Why Bother?	**Extension of previous work** Year 8 Autumn term – Multiplicative Change **Future learning** Year 10 Autumn term - Trigonometry

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Topic 12	Reasoning with proportion **Solving ratio and proportion problems**		This topic mostly aims to distinguish between solving direct proportion and inverse proportion problems. Solve ratio problems. Solve best buy problems using the most efficient method not unitary method every time.	Scale factor Multiplier Inverse Direct Relationship Equal parts Unit cost	Careers – Maths, Why Bother? Financial maths – Life after SWR.	**Extension of previous work** Year 8 – Autumn term – Ratio and scale Year 8 Autumn term – Multiplicative Change **Future learning** Year 10 – Summer term – Ratios and fractions
Topic 13	Reasoning with proportion **Rates**		Using their recent knowledge of inverse relationships, we move to investigate speed distance and time in detail. We link this to density, mass, and volume. Calculating speed distance time, including the use of and drawing distance-time graphs.	Speed Per Convert Density Constant rate Flow rate	Careers – Maths, Why Bother?	**Extension of previous work** Year 9 Summer term – Solving ratio and proportion problems Year 8 Autumn term – Multiplicative Change **Future learning** Year 10 – Summer term – Ratios and fractions
Topic 14	Representations and revision **Probability**		Work with relative frequency, expected outcomes and independent events. This includes students working with events or diagrams to work out probabilities. Some will look at probability tree diagrams.	Event Outcome Probability Frequency Independent Venn diagram Two-way table	Careers – Maths, Why Bother?	**Extension of previous work** Year 8 Autumn term – Tables and probabilities **Future learning** Year 10 – Spring term - Probability
Topic 15	Representations and revision **Algebraic representation**		Draw and interpret quadratic graphs. Represent inequalities on a number line and a coordinate axis.	Quadratic Parabola Turning point	Careers – Maths, Why Bother?	**Extension of previous work** Year 9 Autumn term – Straight line graphs **Future learning** Year 11 Autumn term – Non-linear Graphs