



Year 10 Curriculum Intent

Mathematics is a language; international, universal and timeless. We want all students to experience the beauty, power and enjoyment of Mathematics, developing a sense of curiosity about the subject with a clear understanding of many aspects. We are committed to ensuring all students are Mathematically fluent, enabling them to adapt to challenges that life presents. We foster a 'can do' attitude and we promote the fact that it is good to do 'hard things'.

Year 10 Curriculum Overview

Half term 1	Half term 2	Half term 3	Half term 4	Half term 5	Half term 6
- Block 1 – Congruence, similarity & enlargement - Block 2 – Trigonometry	- Block 3 – Representing solutions of equations & inequalities - Block 4 – Simultaneous equations	- Block 5 – Angles & bearings - Block 6 – Working with circles - Block 7 – Vectors	- Block 8 – Ratios & fractions - Block 9 – Percentages & interest - Block 10 – Probability	- Block 11 – Collecting representing & interpreting data - Block 12 – Non calculator methods	- Block 13 – Types of number and sequences - Block 14 – Indices & roots - Block 15 – Manipulating expressions

Key Question

- Does enlargement always make a shape bigger? - Why can the same side on a right-angled triangle be labelled the 'opposite' on some occasions, and the 'adjacent' on others?	- Do the solution sets contain only integers? - Why is there only one solution to two equations containing two variables?	- Should bearings be written to one decimal place? - What is the formula for the area of a circle? - What is the significance of the order of the letters when writing $\overrightarrow{AB}$? What does the arrow tell us?	- Can a ratio compare more than two quantities? - Which percentages are best worked out mentally? - What types of number can we use to represent probabilities? Can we use a ratio? Why or why not?	- Give an example of a biased question in a questionnaire. How might you improve it? - Is it okay to give the solution to an equation as a fraction rather than a decimal? Why or why not?	- What's the difference between a term-to-term rule and a position-to-term rule? - What is the difference between a base and an index? - How can you tell if two terms are like or unlike?
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Key Vocabulary

- Similar - Congruent - Hypotenuse - Adjacent - Opposite - Formula	- Variable - Expression - Inequality - Eliminate - Substitute - Coefficient	- Sector - Segment - Tangent - Chord - Subtend - Scalar	- Compound (interest) - Simple (interest) - Depreciate - Iterate - Exact value - Complement	- Population - Cumulative - Extrapolation - Reciprocal - Recurring - Terminating	- Arithmetic - Geometric - Triangular - Base - Index - Root
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	The knowledge you will need to recall:	How you will apply this knowledge:	This links to:
1	- Enlarge a shapes by a factor, work with similar and congruent shapes. - Use trigonometry to find missing sides and angles in right-angled triangles and how to use Pythagoras' Theorem. Utilise non- right-angled trigonometry (Higher).	- Extend and formalise their knowledge of ratio and proportion in working with measures and geometry. Make and test conjectures about the generalisations that underlie patterns and relationships; look for proofs or counter-examples. - Develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems. Make and use connections between different parts of mathematics to solve problems. Model situations mathematically and express the results using a range of formal mathematical representations, reflecting on how their solutions may have been affected by any modelling assumptions. - Select appropriate concepts, methods and techniques to apply to unfamiliar and non-routine problems; interpret their solution in the context of the given problem	- Year 9 Summer – Enlargement and Similarity. - Year 9 Spring 2 – Pythagoras' Theorem.
2	- Solve and represent equations and inequalities. Solve and represent quadratic equations and inequalities (Higher). - Solve a pair of linear simultaneous equations. Solve simultaneous equations including quadratics and with a third term (Higher).	- Translate simple situations or procedures into algebraic expressions or formulae; derive an equation, solve the equation and interpret the solution. Select appropriate concepts, methods and techniques to apply to unfamiliar and non-routine problems; interpret their solution in the context of the given problem. - Model situations mathematically and express the results using a range of formal mathematical representations, reflecting on how their solutions may have been affected by any modelling assumptions.	- Year 9 Autumn 1 – Forming and Solving Equations. Year 9 Summer 2 – Algebraic Representation. - Year 9 Autumn 1 – Forming and Solving Equations.
3	- Measure, read, understand and represent bearings. Solve bearings problems using the Pythagoras and trigonometry (Higher). - Know and use parts of circles to calculate area, circumference and perimeter. Understand and use formulae to find the volume and surface area of cylinders, cones and spheres. Know and use Circle Theorems (Higher). - Understand and represent vectors, including vector notation. Use vectors to explore geometric problems (Higher).	- Use mathematical language and properties precisely. Reason deductively in geometry, number and algebra, including using geometrical constructions. Make and use connections between different parts of mathematics to solve problems. - Use mathematical language and properties precisely. Make and use connections between different parts of mathematics to solve problems.	- Year 10 Autumn 1 – Similarity and Congruence. Year 10 Autumn 1 – Trigonometry. - Year 9 Autumn: Three Dimensional Shapes. - Year 9 Spring: Deduction.
4	- Work with, share and convert fluently between ratio and fractions. Use ratio in respect of area and volume problems (Higher). - Work with percentages in a range of context such as increase, decrease, growth, decay and interest. Understand iterative processes (Higher). - Work with and know the fundamentals of probability and how to represent it in several ways such as in tables, Venn diagrams and probability trees. Construct and interpret conditional probabilities (Higher).	Make and use connections between different parts of mathematics to solve problems.	- Year 9 Summer: Solving Ratio and Proportion Problems. - Year 9 Spring: Using percentages/Maths and Money. - Year 9 Summer: Probability.
5	- Collect, represent and interpret data in a range of ways including Frequency tables, frequency polygons, line charts, bar charts, two-way tables, and pie charts. Work with histograms, cumulative frequency diagrams and box plots (Higher). - Performing the four operations with integers and decimals, rounding, estimating and understanding the limits of accuracy. Understand and use surds, converting recurring decimals to fractions and calculating upper and lower bounds (Higher).	- Explore what can and cannot be inferred in statistical and probabilistic settings and express their arguments formally. Assess the validity of an argument and the accuracy of a given way of presenting information. - Use number sense. Break down and solve multi-step problems.	- Year 8: Representing Data. Year 8: The Data Handling Cycle. - Year 9: Numbers.
6	- Understand and work with factors, multiples, primes, HCF and LCM. Describe and continue arithmetic and geometric sequences and Find the rule for the nth term of a linear sequence. Describe and continue sequences involving surds and find the rule for the nth term of a quadratic sequence (Higher). - Simplify and evaluate using rules of indices and convert, manipulate and calculate with standard form. Understand and use fractional indices (Higher). - Simplify algebraic expressions and use identities. Use four operations with algebraic fractions and algebraic arguments and proof (Higher).	- Use number sense. Break down and solve multi-step problems. - Consolidate their numerical and mathematical capability from key stage 3 and extend their understanding of the number system to include powers, roots {and fractional indices}. - Argue mathematically to show algebraic expressions are equivalent and use algebra to support and construct arguments {and proofs}.	- Year 9: Numbers. Year 8: Sequences. - Year 7: Prime Numbers & Proof. Year 8: Indices/Standard Form. - Year 9 – Autumn 1 – Forming and Solving Equations.. Year 10 – Autumn 1 – Representing Solutions and Inequalities.



	Half-term 1	Half-term 2	Half-term 3	Half-term 4	Half-term 5	Half-term 6
Spell It	HW 1 - Writing probabilities as fractions, decimals and percentages - Calculating experimental probabilities - Expected results from repeated experiments - Probabilities of mutually exclusive events	- Finding unknown sides in right-angled triangles - Finding unknown angles in right-angled triangles	Solving simultaneous equations using elimination	- Understanding column vectors - Adding and subtracting column vectors - Multiplying column vectors by a scalar	- Using probability phrases - Writing probabilities as fractions, decimals and percentages - Probabilities of mutually exclusive events - Expected results from repeated experiments	- Finding averages from frequency tables - Finding averages from diagrams - Finding averages from grouped data
	HW 2 - Sample space diagrams - Tree diagrams for independent events - Tree diagrams for dependent events - Venn diagrams - Venn diagrams with set notation	Using the exact values of trigonometric ratios	- Solving simultaneous equations using substitution - Constructing and solving linear simultaneous equations	- Identifying parallel vectors - Solving geometric problems using vectors - Translation	- Calculating experimental probabilities - Sample space diagrams - Venn diagrams - Frequency trees - Tree diagrams for independent events - Tree diagrams for dependent events	- Choosing suitable averages and solving problems - Presenting data and making conclusions - Comparing populations using diagrams
Review it	HW 3 - Understanding similarity - Understanding congruence - Mixed problems: Understanding similarity and congruence	- Using algebraic notation - Simplifying expressions by collecting like terms	- Angles on a line and about a point - Vertically opposite angles - Angles in triangles - Angles in quadrilaterals - Combining angle facts	- Writing and simplifying ratios - Using equivalent ratios to find unknown amounts	- Types of data - Sampling and bias - Designing and using questionnaires - Collecting and recording data using tables	- Adding and subtracting decimals - Adding and subtracting with negative numbers - Adding and subtracting fractions - Adding and subtracting mixed numbers
	HW 4 - Enlargement by a positive scale factor - Finding unknown sides in similar shapes	- Solving equations with two or more steps - Solving equations with the unknown on both sides - Constructing and solving equations	- Angles on parallel lines - Using quadrilateral properties to find angles - Measuring and drawing bearings - Calculating bearings	- Combining ratios - Converting between ratios, fractions and percentages	- Interpreting frequency tables and two-way tables - Interpreting frequency tables with grouped data	- Using a written method to multiply decimals - Multiplying fractions - Multiplying with mixed numbers - Using a written method to divide with decimals - Dividing fractions - Dividing with mixed numbers - Multiplying and dividing with negative numbers
Apply it	HW 5 Congruent triangles	- Reading and drawing inequalities on number lines - Solving inequalities with the unknown on both sides - Constructing and solving inequalities	- Identifying parts of circles - Finding the circumference of circles - Finding the area of circles - Finding the arc length of sectors - Finding the area of sectors	- Converting between fractions, decimals and percentages - Finding percentages of amounts without a calculator - Percentage change without a calculator - Percentage change with a calculator	- Drawing line graphs - Interpreting line graphs - Using lines of best fit	- Finding factors and using divisibility tests - Finding the lowest common multiple (LCM) - Finding the highest common factor (HCF) - Finding prime numbers - Prime factor decomposition - Finding the HCF and LCM using prime factor decomposition
	HW 6 Understanding sin, cos and tan	Solving simultaneous equations graphically	- Finding the surface area of cylinders - Finding the surface area of cones - Finding the surface area of spheres - Finding the volume of cylinders - Finding the volume of cones - Finding the volume of spheres	- Writing numbers as percentages of other numbers - Simple interest calculations - Compound interest calculations - Growth and decay	- Calculating the range - Calculating the median - Finding the mode - Calculating the mean	- Term-to-term rules - Substituting into position-to-term rules - Position-to-term rules for arithmetic sequences - Position-to-term rules for geometric sequences - Special sequences
Beyond the curriculum	Independent learning – You can use the independent learning feature of SPARX to look to consolidate work not set in your weekly homework, look at new content or you could do some XP boost to gain more points on SPARX!					