



Year 9 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 9 Curriculum Overview

Half term 1	Half term 2	Half term 3	Half term 4	Half term 5	Half term 6
- Block 1 – Straight line graphs - Block 2 – Forming & solving equations - Block 3 – Testing conjectures	- Block 4 – Three dimensional shapes - Block 5 – Constructions & congruency	- Block 6 – Numbers - Block 7 – Using percentages - Block 8 – Maths & money	- Block 9 – Deduction - Block 10 – Rotation & translation - Block 11 – Pythagoras' theorem	- Block 12 – Enlargement & similarity - Block 13 – Solving ratio & proportion problems - Block 14 – Rates	- Block 15 – Probability - Block 16 – Algebraic representation - Revision – Closing KS3 gaps in knowledge

Key Question

- All of the points $y = x$ have something in common. What is it? - What is the difference between an equation and an inequality? - How many examples do you need to prove that a statement or a conjecture is false? What do we call this type of example?	- How do we know that a solid shape is a prism? - What does equidistant mean?	- Why are all fractions rational numbers? - Why is the multiplier to decrease by 35% not 0.35? - What is VAT? How is VAT calculated?	- What is a conjecture? - How do you find the order of rotational symmetry of a shape? - What is the Hypotenuse of a right-angled triangle?	- What do you notice about the angles of similar shapes? - What is the difference between direct and inverse proportion? - Why shouldn't we round if we are then going to substitute this answer into the S/D/T formula?	- If you know the probability that an outcome happens, how can you easily find the probability it doesn't happen? - Are all quadratic graphs symmetrical?
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Key Vocabulary

- Linear - Function - Solve - Inequality - Prime - Conjecture	- Prism - Elevation - Construct - Bisect - Locus - Equidistant	- Rational - Irrational - Surd - Depreciate - Credit - Debit	- Irregular - Invariant - Vector - Translate - Hypotenuse - Adjacent	- Similar - Scale factor - Enlargement - Constant - Compound measures - Rearrange	- Relative frequency - Independent - Bias - Quadratic - Parabola - Turning point
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	The knowledge you will need to recall:	How you will apply this knowledge:	This links to:
1	- Find and use the equation of a straight line. - Form and solve equations and inequalities. - Test conjectures in a range of contexts.	- Identify variables and express relations between variables algebraically and graphically. - Identify variables and express relations between variables algebraically. - Make and test conjectures about patterns and relationships; look for proofs or counter-examples.	- Year 8: Working in the cartesian plane. - Unit Year 8: Brackets, equations and inequalities. - Unit Year 8: Brackets, equations and inequalities .
2	- Find volumes and surface areas of 3-D shapes. - Use a pair of compasses to perform accurate constructions.	- Use language and properties precisely to analyse numbers, algebraic expression, 2D and 3D shapes. Derive and apply formulae to calculate and solve problems. - Derive and use the standard ruler and compass constructions (perpendicular bisector of a line segment, constructing a perpendicular to a given line from/at a given point, bisecting a given angle); recognise and use the perpendicular distance from a point to a line as the shortest distance to the line.	- Year 8: Area of trapezia & circles . - Year 8: Line symmetry & reflection.
3	- Extend knowledge of number to include rational and HCF and LCM within contexts. - Solve percentage problems involving finding percentages change and reverse percentages. - Explore financial mathematics.	- Appreciate the infinite nature of the sets of integers, real and irrational numbers. - Develop the use of formal mathematical knowledge to interpret and solve problems, including in financial mathematics. - Select and use appropriate calculation strategies to solve increasingly complex problems.	- Year 8: Standard Index Form. - Year 8: Fractions & Percentages. - Year 8: Fractions & Percentages .
4	- Begin to understand proof and be able to investigate and prove basic conjectures. - Perform and describe a rotation and translation. - Know and apply Pythagoras' Theorem.	- Make and test conjectures about patterns and relationships; look for proofs and counterexamples. Select appropriate concepts, methods and techniques to apply to unfamiliar and non-routine problems. - Begin to reason deductively in geometry, number and algebra, including using geometrical constructions. Begin to model situations mathematically and express the results using a range of formal mathematical representations. - Develop the use of formal mathematical knowledge to interpret and solve problems, Recognising, when to use Pythagoras' theorem in non-obvious situations, for instance when a diagram is not given in the question.	- Year 8: Angles in parallel lines and polygons. - Year 8: Line symmetry & reflection. - Year 8: Brackets, Equations and Inequalities.
5	- Recognise similarity and perform enlargements . - Solving ratio and proportion problems. - Use and understand compound units.	- Move freely between different numerical and diagrammatic representations. - Select and use appropriate calculation strategies to solve increasingly complex problems. Substitute values in expressions, rearrange and simplify expressions, and solve equations. Extend and formalise their knowledge of ratio and proportion in working with measures and geometry, and in formulating proportional relations algebraically. Identify variables and express relations between variables algebraically and graphically. Interpret when the structure of a numerical problem requires additive, multiplicative or proportional reasoning. - Extend and formalise their knowledge of ratio and proportion in working with measures and geometry, and in formulating proportional relations algebraically Extend their understanding of the number system; make connections between number relationships, and their algebraic and graphical representations	- Year 8 - Multiplicative Change. - Year 8 - Multiplicative Change. - Year 8 - Multiplicative Change.
6	- Understand relative frequency and the difference between theoretical and experimental probability. - Recognise, sketch and produce graphs of quadratic functions.	- Extend and formalise their knowledge of ratio and proportion in working with measures and geometry, and in formulating proportional relations algebraically. Extend their understanding of the number system; make connections between number relationships, and their algebraic and graphical representations. - Interpret when the structure of a numerical problem requires additive, multiplicative or proportional reasoning. Explore what can and cannot be inferred in statistical and probabilistic settings and begin to express their arguments formally. Begin to model situations mathematically and express the results using a range of formal mathematical representations. - Use algebra to generalise the structure of arithmetic, including to formulate mathematical relationships. Substitute values in expressions, rearrange and simplify expressions, and solve equations. Move freely between different numerical, algebraic, graphical and diagrammatic representations. Develop algebraic and graphical fluency, including understanding linear and simple quadratic functions.	- Year 8: Sequences. - Year 8: The data handling cycle. - Year 8: Indices

	Half-term 1	Half-term 2	Half-term 3	Half-term 4	Half-term 5	Half-term 6	
Spell It	HW 1	- Plotting horizontal, vertical and diagonal lines - Plotting straight line graphs	Writing algebraic proofs	- Understanding congruence - Congruent triangles	- Simple interest calculations - Compound interest calculations	- Enlargement by a positive scale factor - Understanding similarity - Finding unknown sides in similar shapes	- Probabilities of mutually exclusive events - Sample space diagrams - Venn diagrams
	HW 2	- Interpreting equations of straight-line graphs - Finding equations of straight-line graphs	- Properties of 3D shapes - Nets of 3D shapes - Plans and elevations	- Adding and subtracting integers - Adding and subtracting decimals - Using a written method to multiply integers - Using a written method to multiply decimals - Using a written method to divide integers - Using a written method to divide with decimals	- Understanding, measuring and drawing angles - Angles on a line and about a point - Vertically opposite angles - Angles in triangles - Angles in quadrilaterals	- Solving direct proportion word problems - Solving inverse proportion word problems	- Plotting graphs of quadratic functions - Interpreting graphs of quadratic functions
Review it	HW 3	- Finding equations of linear real-life graphs - Using and interpreting linear real-life graphs	- Finding the surface area of cubes and cuboids - Finding the surface area of prisms - Finding the surface area of cylinders	- Adding and subtracting fractions - Adding and subtracting mixed numbers - Multiplying fractions - Multiplying with mixed numbers - Dividing fractions - Dividing with mixed numbers	- Combining angle facts - Line and shape properties - Angles on parallel lines - Using quadrilateral properties to find angles	- Using equivalent ratios to find unknown amounts - Sharing amounts in a given ratio	- Graphs of cubic functions - Graphs of reciprocal functions - Reading and drawing inequalities on number lines
	HW 4	- Solving equations with one step - Solving equations with two or more steps - Solving equations with the unknown on both sides - Constructing and solving equations	- Finding the volume of cubes and cuboids - Finding the volume of prisms - Finding the volume of cylinders	- Finding the lowest common multiple (LCM) - Finding the highest common factor (HCF) - Using standard form with positive indices - Using standard form with negative indices - Multiplying and dividing numbers in standard form - Adding and subtracting numbers in standard form	- Symmetry - Rotation	- Calculating with speed - Interpreting distance-time graphs - Calculating speed from distance-time graphs	Consolidation
Apply it	HW 5	- Solving single inequalities - Solving inequalities with the unknown on both sides - Solving double inequalities	- Drawing and interpreting scale diagrams - Using a pair of compasses - Constructing triangles	- Converting between fractions, decimals and percentages - Finding percentages of amounts without a calculator - Finding percentages of amounts with a calculator	Translation	- Calculating with rates - Calculating with density - Sketch graphs of water flows	Consolidation
	HW 6	- Constructing and solving inequalities - Substituting into algebraic formulae - Changing the subjects of formulae	- Constructing bisectors of angles - Constructing perpendicular bisectors and lines - Mixed problems: Constructing bisectors and perpendicular lines	- Percentage change without a calculator - Percentage change with a calculator - Finding original values in percentage calculations - Finding the percentage an amount has been changed by	Using Pythagoras' theorem in 2D	- Writing probabilities as fractions, decimals and percentages - Calculating experimental probabilities - Expected results from repeated experiments	Consolidation
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!						