

KS3 YEAR 9 CURRICULUM MAPPING

Autumn Term 1.1	Autumn Term 1.2	Autumn Term 2.1	Autumn Term 2.2
REASONING WITH ALGEBRA <u>STRAIGHT LINE GRAPHS (2 weeks)</u> -Lines parallel to the axis, $y=x$ and $y=-x$ (R) -Using tables of values (R) -Compare gradients -Compare intercepts -Understand and use $y=mx+c$ -Write an equation in the form $y=mx+c$ (H) -Find the equation of a line from a graph -Interpret gradients and intercepts of real-life graphs -Model real-life graphs involving inverse proportion (H) -Explore perpendicular lines (H) <u>FORMING & SOLVING EQUATIONS (1 week)</u> -One and two-step equations and inequalities (R) -Equations and inequalities with brackets (R) -Inequalities with negative numbers -Solve equations with unknowns on both sides -Solve inequalities with unknowns on both sides -Equations and inequalities in other mathematical contexts	REASONING WITH ALGEBRA <u>FORMING & SOLVING EQUATIONS (1 week)</u> -Formulae and equations -Rearrange formulae (one-step) -Rearrange formulae (two-step) -Rearrange complex formulae (H) <u>TESTING CONJECTURES (a mathematical statement which appears to be true, but has not been formally proven) (2 weeks)</u> -Factors, multiples and primes (R) -True or false -Always, sometimes, never true -Show that -Conjectures about number • <i>make and test conjectures about patterns and relationships; look for proofs or counterexamples</i> • <i>begin to reason deductively in geometry, number, and algebra</i> • <i>use the concepts and vocabulary of prime numbers, factors (or divisors), multiples, common factors, common multiples, highest common factor, lowest common multiple, prime factorisation</i> -Expand a pair of binomials -Conjectures with algebra -Explore the 100 grid -Expand three binomials (H) • <i>simplify and manipulate algebraic expressions to maintain equivalence by expanding products of two or more binomials</i>	CONSTRUCTING 2&3 DIMENSIONS <u>THREE DIMENSIONAL SHAPES (3 weeks)</u> -Know names of 2D and 3D shapes -Recognise prisms (including language of edges and vertices) -Accurate nets of cuboids and other 3D shapes -Sketch and recognise nets of cuboids and other 3D shapes -Plans and elevations -Find area of 2D shapes (R) -Surface area of cubes and cuboids -Surface area of triangular prisms -Surface area of a cylinder -Volume of cubes and cuboids -Volume of other 3D shapes - prisms and cylinders -Explore volumes of cones, pyramids, and spheres (H)	CONSTRUCTING 2&3 DIMENSIONS <u>CONSTRUCTIONS & CONGRUENCY (2 weeks)</u> -Draw and measure angles (R) -Construct and interpret scale drawings (R) -Locus of distance from a point -Locus of distance from a straight line -Locus equidistant from two points -Construct a perpendicular bisector -Construct a perpendicular from a point -Construct a perpendicular to a point -Locus of distance from two lines -Construct an angle bisector -Construct triangles from given information (R) -Identify congruent figures -Explore congruent triangles -Identify congruent triangles

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Extend your understanding using investigative methods: -Can you draw the graph of $y=x$ after it has been rotated 90 degrees clockwise about (1,1)? -Can you find the area between this graph and the x-axis, between $x=3$ and $x=7$? -What statements can you make about the car that passes the school gates at 11am on Monday? How will you come up with statements and test your ideas?	Extend your understanding using investigative methods: -Know the meaning of the 'subject' of a formula. -Change the subject of a formula when one step is required. -Change the subject of a formula when two steps are required. -Forming and solving equations involving algebra and other areas of mathematics such as area and perimeter. -Evaluate statements and justify which answer is correct by providing a counterargument by way of a correct solution.	Extend your understanding using investigative methods: -Use a single sheet of A4 paper and make a cylinder having the greatest possible volume. The cylinder must be closed off by a circle at each end. -How can you change the surface area of a cuboid but keep its volume the same? -How can you change the volume but keep the surface area the same? -What are the possible areas of triangles drawn in a square?	Extend your understanding using investigative methods: -Be able to estimate the size of given angles. -Able to sketch the locus of point on a vertex of a rotating shape as it moves along a line, of a point on the circumference and at the centre of a wheel.
<u>Revision Opportunities</u> • Create a Revision Card for each unit. Highlight any formulae you need to remember and key words, if possible, stick one question that helps you remember the topic and work it out explaining what steps you took to help you to remember how to solve the problem. • You can revise using video clips in Sparx Maths and Corbettmaths. • Complete the Revision homework booklets that compile KS3 assessment questions			

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Spring Term 1.1	Spring Term 1.2	Spring Term 2.1	Spring Term 2.2
<u>REASONING WITH NUMBERS</u> NUMBERS (2 weeks) -Integers, real and rational numbers -Understand and use surds (H) -Work with directed number (R) -Solve problems with integers -Solve problems with decimals -HCF and LCM (R) -Adding and subtracting fractions (R) -Multiplying and dividing fractions (R) -Solve problems with fractions -Numbers in standard form (R) USING PERCENTAGES (1 week) -Use the equivalence of fractions, decimals and percentages (R) -Calculate percentage increase and decrease (R) -Express a change as a percentage (R)	<u>REASONING WITH NUMBERS</u> USING PERCENTAGES 2 (1 week) -Solve reverse percentage problems -Recognise and solve percentage problems (non-calculator) -Recognise and solve percentage problems (calculator) -Solve problems with repeated percentage change (H) MATHS AND MONEY (2 weeks) -Solve problems with bills and bank statements -Calculate simple interest -Calculate compound interest -Solve problems with Value Added Tax -Calculate wages and taxes -Solve problems with exchange rates -Solve unit pricing problems	<u>REASONING WITH GEOMETRY</u> DEDUCTION (2 weeks) -Angles in parallel lines (R) -Solve angle problems using chains of reasoning -Angle problems with algebra -Conjectures with angles -Conjectures with shapes -Link constructions and geometrical reasoning (H) ROTATION AND TRASLATION 1 (1 week) -Identify the order of rotational symmetry of a shape -Compare and contrast rotational symmetry with line symmetry -Rotate a shape about a point on a shape -Rotate a shape about a point not on a shape	<u>REASONING WITH GEOMETRY</u> ROTATION AND TRASLATION 2 (1 week) -Translate points and shapes by a given vector -Compare rotation and reflection of shapes -Find the result of a series of transformations (H) PYTHAGORAS' THEOREM (2 weeks) -Squares and square roots (R) -Identify the hypotenuse of a right-angled triangle -Determine whether a triangle is right-angled -Calculate the hypotenuse of a right-angled triangle -Calculate missing sides in right-angled triangles -Use Pythagoras' theorem on coordinate axes -Explore proofs of Pythagoras' theorem -Use Pythagoras' theorem in 3D shapes (H)

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Extend your understanding using investigative methods: -Work out the price of a deposit, given the price of a sofa is £480 and the deposit is 15% of the price, without a calculator. -Find fractional percentages of amounts, with and without using a calculator. · - -- Convince me that 0.125 is $\frac{1}{8}$. · -Work out percentages in real-life contexts. -Calculate original values and evaluate statements in relation to this value justifying which statement is correct.	Extend your understanding using investigative methods: - Explore the effects of compound interest on savings over time. -Use percentages to allocate income for expenses, savings, and discretionary spending. -Investigate the impact of unexpected costs, such as medical bills or car repairs, on the budget. -Calculate how much money in a foreign currency can be exchanged for a fixed amount of domestic currency. Investigate the effects of different loan durations or interest rates.	Extend your understanding using investigative methods: - Describe and transform a given shape by either a rotation or a translation . -Carry out rotations with the centre of rotation inside the shape. -Use trial and error with tracing paper to find the centre of rotation.	Extend your understanding using investigative methods: -Answer: Does 2, 3, 6 give a right-angled triangle? -Justify when to use Pythagoras' Theorem and when to use trigonometry. -Combined triangle problems that involve consecutive application of Pythagoras' Theorem or a combination of Pythagoras' Theorem and the trigonometric ratios with more complex diagrams. -Apply Pythagoras' Theorem and/or the trigonometric ratios to real-life scenarios that require them to evaluate whether their answer fulfils certain criteria, e.g., the angle of elevation of 6.5 m ladder cannot exceed 65°. What is the greatest height it can reach? Rounding skills will be important here when justifying their findings.
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Summer Term 1.1	Summer Term 1.2	Summer Term 2.1	Summer Term 2.2
<u>REASONING WITH PROPORTION</u> <u>ENLARGEMENT & SIMILARITY (2 weeks)</u>	<u>SOLVING RATIO & PROPORTION PROBLEMS (2 weeks)</u>	<u>REASONING WITH PROPORTION</u> <u>RATES (2 weeks)</u>	<u>ALGEBRAIC REPRESENTATION</u> <u>(1 week)</u>
-Recognise enlargement and similarity	-Solve problems with direct proportion (R)	-Solve speed, distance and time problems without a calculator	-Draw and interpret quadratic graphs
-Enlarge a shape by a positive integer scale factor	-Direct proportion and conversion graphs (R)	-Solve speed, distance and time problems with a calculator	-Interpret graphs, including reciprocal and piece-wise
-Enlarge a shape by a positive integer scale factor from a point	-Solve problems with inverse proportion	-Use distance-time graphs	-Investigate graphs of simultaneous - equations (H)
-Enlarge a shape by a positive fractional scale factor	-Graphs of inverse relationships (H)	-Solve problems with density, mass and volume	-Represent inequalities
-Enlarge a shape by a negative scale factor (H)	-Solve ratio problems given the whole or a part (R)	-Solve flow problems and their graphs	<u>PYTHAGORAS' THEOREM (R)</u> <u>(2 weeks)</u>
-Work out missing sides and angles in a pair of given similar shapes	-Solve best buy problems	-Rates of change and their units	-Squares and square roots (R)
-Solve problems with similar triangles (H)	-Solve problems involving ratio and algebra (H)	-Convert compound units	-Identify the hypotenuse of a right-angled triangle (R)
-Explore ratios in right-angled triangles (H)		<u>PROBABILITY (2 weeks)</u>	-Determine whether a triangle is right-angled(R)
		-Single event probability (R)	-Calculate the hypotenuse of a right-angled triangle (R)
		-Relative frequency - including convergence	-Calculate missing sides in right-angled triangles (R)
		-Expected outcomes	-Use Pythagoras' theorem on coordinate axes (R)
		-Independent events	-Explore proofs of Pythagoras' theorem (R)
		-Use tree diagrams (H)	-Use Pythagoras' theorem in 3D shapes (H)
		-Use tree diagrams to solve without replacement problems (H)	
		-Use diagrams to work out probabilities	

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Extend your understanding using investigative methods: -Recognise that enlargements preserve angle but not length. -Understand that similar shapes are enlargements of each other and angles are preserved.	Extend your understanding using investigative methods: -Write/interpret a ratio to describe a situation such as 1 blue for every 2 red, 3 adults for every 10 children ... -Recognise that two paints mixed red to yellow 5: 4 and 20: 16 are the same colour. -When a quantity is split in the ratio 3:5, what fraction does each person get? -Find amounts for three people when amount for one given.	Extend your understanding using investigative methods: -Interpret a description of a journey into a distance-time or speed-time graphs.	Extend your understanding using investigative methods: -Plot quadratic graphs -
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