



Topic	Learning Objectives	Key Vocabulary	Learning Sequence	Linked Learning	Home Learning
Proportion	Be able to represent proportion in a variety of ways Work with direct proportion Work with inverse proportion	Compare, comparison Multiplier Constant Coefficient Linear Ratio Proportion	1) Recapping what proportion is and using the unitary method 2) Exploring different representations of proportion 3) Developing the understanding of the multiplier and as a result the formula (link to graphs using x and y) 4) Obtaining the algebraic formula with direct proportion introducing k and α 5) Using k and α to calculate information involving direct proportion	Multiplying integers and decimals Plotting graphs of linear functions Substitution into algebraic expressions	One written and one retrieval piece on proportion
Rearranging formulae more complex	Be able to rearrange a variety of formulae	Formula, Formulae Variable Term Coefficient Power Indices Subject	1) Rearranging basic formulae 1 and 2 step 2) Rearranging involving brackets 3) Rearranging formulae involving fractions 4) Rearranging formulae involving indices 5) A mixture of questions involving rearranging formulae 6) Substitution into scientific formulae	Understanding inverse functions, including powers and roots Solving equations Expanding brackets	One written and one retrieval piece on rearranging formulae



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Indices	<p>Recap basic laws of indices</p> <p>Work with negative and fractional indices</p> <p>Work with indices and algebra</p>	<input type="checkbox"/> Power <input type="checkbox"/> Root <input type="checkbox"/> Index, Indices <input type="checkbox"/> Positive <input type="checkbox"/> Negative	<p>1) Recapping indices including substitution with indices</p> <p>2) Recap laws of indices</p> <p>3) Writing numbers with different bases</p> <p>4) Manipulating rules of indices to simplify a question</p> <p>5) Problems involving indices</p> <p>6) Negative indices</p> <p>7) Negative indices including coefficients</p> <p>8) Fractional indices exploring patterns and calculating</p>	<p>Basic laws of indices</p> <p>Cancelling fractions by identifying common factors</p> <p>Powers and roots</p> <p>Identifying reciprocals</p>	<p>One written and one retrieval piece on indices</p>
Pythagoras and Trigonometry	<p>Calculate with Pythagoras' theorem</p> <p>Understand the Trigonometric ratios</p> <p>Use the Trigonometric ratios to calculate sides and angles on right angled triangles</p> <p>Use trigonometry and Pythagoras with bearings</p>	<input type="checkbox"/> Pythagoras' theorem <input type="checkbox"/> Right angle <input type="checkbox"/> Square root <input type="checkbox"/> Sine <input type="checkbox"/> Cosine <input type="checkbox"/> Tangent <input type="checkbox"/> Opposite <input type="checkbox"/> Adjacent <input type="checkbox"/> Hypotenuse <input type="checkbox"/> Elevation <input type="checkbox"/> Depression <input type="checkbox"/> Bearing	<p>1) Recap Pythagoras</p> <p>2) 3D Pythagoras</p> <p>3) Exploring the ratios</p> <p>4) Labelling the triangle and picking a ratio (no calculating)</p> <p>5) Calculating angles</p> <p>6) Calculating missing sides</p> <p>7) Calculating missing sides</p> <p>8) Calculating angles and sides using trig</p> <p>9) Angles of elevation and depression</p> <p>10) Working with right angled triangles (pythag and trig)</p> <p>11) Bearings and right angled triangles</p>	<p>Solving linear equations</p> <p>Area of squares</p> <p>Powers and roots</p> <p>Rearranging formulae</p>	<p>One written and one retrieval piece on Pythagoras and trigonometry</p>



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Recurring decimals and fractions	<p>Understand the relationship between fractions decimals and percentages</p> <p>Convert between fractions and decimals</p>	<p>Mixed number</p> <p>Improper fraction</p> <p>Decimal</p> <p>Terminating</p> <p>Recurring</p> <p>Simplify, Cancel</p>	<p>1) investigation around fractions and decimals, identifying recurring and terminating explorative</p> <p>2) Converting fractions to decimals</p> <p>3) Converting fractions to recurring decimals</p> <p>4) GCSE style questions</p>	<p>Equivalent fractions</p> <p>Rounding</p> <p>Division by multiples of 10</p>	One written and one retrieval piece on fractions
Data and exploring averages	<p>Calculate averages</p> <p>Understand and use stem and leaf diagrams</p> <p>Understand quartiles</p>	<p>Frequency</p> <p>Discrete data</p> <p>Stem and leaf</p> <p>Mean</p> <p>Median</p> <p>Mode</p> <p>Quartile</p> <p>Interquartile range</p>	<p>1) Drawing stem and leaf diagrams</p> <p>2) Drawing dual stem and leaf diagrams</p> <p>3) Averages from stem and leaf including comparing them</p> <p>4) Exploring interquartile ranges from listed data</p> <p>5) Comparing data exam style where questions require worded answers</p>	<p>Calculating with averages (mean, median and mode)</p> <p>Know the meaning of discrete and continuous data</p> <p>Calculating probabilities</p>	One written and one retrieval piece on averages



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Quadratics	Expand double brackets, where the coefficient of x is greater than or equal to 1 Factorise quadratics of the form $x^2 \pm ax \pm b$ Factorise quadratics of the form $x^2 - b^2$ Solving quadratic equations by factorising	Product Expand Linear Quadratic Variable Coefficient Common factor Factorise Power Indices	1) Expanding and factorising single brackets 2) Expanding double brackets 3) Factorising quadratics 4) Factorising the difference of 2 squares 5) Solving quadratics through factorising 6) Solving using factorising including linking to a graph	Manipulate expressions by collecting like terms Know the rules of indices (that $x \times x = x^2$) Calculate with negative numbers Know the grid method for multiplying two-digit numbers Identify factors of a number Plotting quadratic graphs	One written and one retrieval piece on quadratics
Angles	Find angles in parallel lines by identifying those that are alternate and corresponding Know the sum of the interior angles in polygons Calculate the interior angles of regular polygons Calculate the exterior angles of polygons	Triangle Quadrilateral Vertically opposite Parallel Alternate angles Corresponding angles Regular/irregular polygon Exterior, interior	1) Recap angles in triangles and quadrilaterals 2) Angles in parallel lines 3) Angles and parallel lines 2 4) Angles in irregular polygons 5) Interior angles in regular polygons 6) Interior and Exterior angles and polygons 7) Problems involving angles and shapes	Know that the angles in a triangle total 180° Know that the angles in a quadrilateral total 360° Know and apply the rules for angles at a point and vertically opposite angles	One written and one retrieval piece on angles



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<p>Linear graphs</p>	<p>Plot graphs of the form $y=-mx+c$ and $ax+by=c$</p> <p>Identify equations of lines from a graph</p> <p>Identify equations of lines from given coordinates</p> <p>Identify equations of parallel lines</p>	<p>Plot</p> <p>Equation</p> <p>Linear</p> <p>Coordinate</p> <p>(Positive/negative) gradient</p> <p>y-intercept</p> <p>Horizontal</p> <p>Vertical</p> <p>Parallel</p> <p>Substitute</p>	<p>1)Plotting equations written as $y=mx+c$</p> <p>2)Plotting other linear graphs</p> <p>3)Exploring the gradient</p> <p>4)Gradients from 2 coordinates</p> <p>5)Equation of a line from the gradient and a point</p> <p>6)Equation of a line from 2 points</p> <p>7)Rearranging and working with the equation of a straight line</p> <p>8)Matching a graph to its equation</p> <p>9)Using technology to explore parallel and perpendicular lines</p> <p>10)Equations of parallel lines</p>	<p>Use coordinates in all four quadrants</p> <p>Write the equation of a line parallel to the x-axis or the y-axis</p> <p>Substitute positive and negative numbers into formulae</p> <p>Rearranging formulae</p>	<p>One written and one retrieval piece on linear graphs</p>
<p>Simultaneous equations</p>	<p>Solve two equations simultaneously, where no variable requires multiplication</p> <p>Solve two equations simultaneously, where variables require multiplication</p> <p>Solve simultaneous equations graphically</p>	<p>Simultaneous equation</p> <p>Variable</p> <p>Eliminate</p> <p>Intersect</p> <p>Coefficient</p>	<p>1)Solving simultaneous equations graphically</p> <p>2)Solving pictorial representations</p> <p>3)Solving basic simultaneous equations, no multiplication by elimination</p> <p>4)Solving simultaneous equations – one multiplication</p> <p>5)Solving simultaneous equations – two multiplications</p> <p>6)Worded simultaneous equations</p>	<p>Plot linear graphs</p> <p>Solve linear equations</p> <p>Substitute numbers into formulae</p> <p>Manipulate expressions by multiplying by a single term</p>	<p>One written and one retrieval piece on simultaneous equations</p>



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Venn and probability	Complete a two-circled Venn diagram Complete a three-circled Venn diagrams	Set Venn diagram Union Intersection	1)Venn diagrams including multiples 2)Worded problem Venn diagrams 3)Three circle Venn diagrams 4)Consolidation lesson	Multiples, factors, primes Calculate the probability of mutually exclusive events Calculate the probability of non-mutually exclusive events	One written and one retrieval piece on venn diagrams



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Fractions	Calculating fractions of amounts Comparing and ordering fractions Multiplying and dividing proper fractions Multiplying and dividing mixed numbers Adding and subtracting proper fractions Adding and subtracting mixed numbers	Mixed number Equivalent fraction Simplify, cancel Improper fraction Percent Multiplier	1) Fractions of amounts 2) FDP of amounts exam style questions 3) Equivalent fractions and converting fractions between mixed and improper 4) Comparing and ordering fractions 5) Multiplying fractions including mixed numbers 6) Dividing fractions including mixed numbers 7) Adding and subtracting fractions including mixed numbers 8) All operations with fractions 9) Worded problems 10) Using ratios with fractions	Division involving remainders Converting between fractions, decimals and percentages Identifying reciprocals Identifying LCM Finding ratio of amounts	One written and one retrieval piece on fractions
Column vectors	Be able to draw a vector Add and subtract vectors Identify parallel vectors	Magnitude Direction Pythagoras Hypotenuse	1) Drawing a vector 2) Adding and subtracting 3) Multiplying vectors including Pythagoras 4) Parallel vectors	Identify parallel lines Translate shapes using vectors Arithmetic with negative numbers	One written and one retrieval piece on vectors.
Inequalities	Solve linear inequalities Drawing inequalities on a number line Identifying sets of integers that satisfy inequalities	(Linear) inequality Unknown Solve Solution set Integer	1) Solving inequalities recap 2) Writing inequalities on and from a number line 3) Finding values of compound inequalities 4) Writing compound inequalities on a number line	Inverse operations Solving linear equations Substituting into expressions	One written and one retrieval piece on inequalities



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Transformations	<p>Translate shapes and describe a give translation</p> <p>Reflect shapes and describe a given reflection</p> <p>Rotate shapes and describe a given rotation</p> <p>Enlarge shapes with a positive and fractional scale factors</p> <p>Describe a given enlargement</p>	<p>Origin</p> <p>Quadrant</p> <p>Translation, Reflection, Rotation</p> <p>Transformation</p> <p>Object, Image</p> <p>Congruent, congruence</p> <p>Vector</p> <p>Similar</p> <p>Enlarge</p> <p>Scale factor</p> <p>Centre of enlargement</p>	<p>1)Translation – Drawing</p> <p>2)Translation – Describing</p> <p>3)Naming horizontal and vertical lines and $y=x$, $y=-x$</p> <p>4)Reflections – Drawing</p> <p>5)Reflections – Describing</p> <p>6)Rotation – Drawing</p> <p>7)Rotation - Describing</p> <p>8)Combining the 3 transformations</p> <p>9)Positive enlargements</p> <p>10)Fractional enlargements</p> <p>11)Describing enlargements</p> <p>12)Combining all transformations</p>	<p>Work with coordinates in all four quadrants</p> <p>Carry out a translation using worded directions</p> <p>Identify equations of lines parallel to the axes</p> <p>Find fractions of amounts</p> <p>Identify scale factors of similar shapes</p>	<p>One written and one retrieval piece on transformations</p>
Quadratic and cubic graphs	<p>Plotting quadratic graphs when x^2 has a positive coefficient</p> <p>Plotting quadratic graphs when x^2 has a negative coefficient</p> <p>Plotting cubic graphs</p>	<p>Function</p> <p>Equation</p> <p>Quadratic</p> <p>Cubic</p> <p>Reciprocal</p> <p>Gradient</p> <p>y-intercept</p> <p>Root</p> <p>Substitution</p> <p>Plot</p>	<p>1)Recap substitution involving powers</p> <p>2)Plotting quadratic graphs</p> <p>3)Plotting quadratics graphs with negative x squared</p> <p>4)Plotting cubic graphs</p> <p>5)Identifying types of graphs</p>	<p>Arithmetic with negative numbers</p> <p>Substituting positive and negative integers into quadratic and cubic expressions</p> <p>Use coordinates in all four quadrants</p>	<p>One written and one retrieval piece on graphs.</p>



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Constructions	Be able to bisect angles Be able to bisect a line Interpret and draw basic loci	Arc Line segment Perpendicular Bisect Perpendicular bisector Locus Loci	1) Bisecting angles 2) Bisect a line 3) Perpendicular to and from a line 4) Basic loci	Measure distances to the nearest millimetre Create and interpret scale diagrams Use compasses to draw circles	One written and one retrieval piece on constructions
GCSE preparation	To be able to interpret the language of GCSE style questions	Solve Prove Formulate Show that	GCSE questions on the following topics covered this year: 1) Proportion 2) Rearranging formulae 3) Indices 4) Pythagoras Theorem 5) Trigonometry 6) Data and averages 7) Angles 8) Linear graphs 9) Simultaneous equations 10) Venn and probability 11) Inequalities	Edexcel GCSE papers (9-1)	One written and one retrieval piece on key GCSE topics.