	Half term 1 Learning Overview (6 weeks)		Half term 2 Learning Overview (6 weeks)		Half term 3 Learning Overview (6 weeks)		Half term 4 Learning Overview (6 weeks)		Half term 5 Learning Overview (6 weeks)		Half term 6 Learning Overview (6 weeks)	
	Algebraic Thinking		**Place Value and Proportion**		**Applications of number**		**Directed Number Fractional Thinking**		**Lines and Angles**		**Reasoning with Number**	
Year 7	**Sequences (2)**	Recognise linear and non-linear sequences Generate sequences from a term to term rule Find missing numbers in a sequence	**Place value and ordering integers and decimals (3)**	Understand and use place value Compare and order numbers Round to powers of 10 and 1 significant figure **H – Write 1 significant figure numbers in standard form**	**Solving problems with addition & subtraction (2)**	Formal methods for adding and subtracting integers and decimals Addition and subtraction in context – perimeter, financial problems, tables, bar charts, line graphs **H – addition and subtraction in standard form**	**Operations and equations with directed number (3)**	Four operations with directed number 2 step equations Order of operations – with directed numbers **H – Roots of positive numbers and explore higher powers and roots**	**Constructing, measuring and using geometric notation (3)**	Geometric notation Draw lines, angles and simple shapes Standard ruler and compass constructions Identify parallel and perpendicular lines and polygons up to decagon Construct and use pie charts	**To include test in week 34 Developing number sense (2)**	Mental arithmetic strategies for integers, decimals and fractions Estimation to check calculations Factors to simplify calculations Calculator strategies to solve problems
	Understand and use algebraic notation (2)	Function machines to represent expressions Substitution into expressions Use technology to represent 1 and 2 step functions graphically	**Fraction, decimal and equivalence (3)**	Interchange between fractions and decimals below 1 Convert between simple fractions, decimals and percentages Equivalent fractions Simplify fractions Use and interpret pie charts **H – Explore fractions, decimals and percentages greater than 1**	**Solving problems with multiplication and division (3)**	Order of operations Use factors and multiples Metric measure conversion Problem solving in context – area of triangles, rectangles, parallelograms, finding the mean **H – area of a trapezium** **H – multiplying and dividing by positive powers of 10** **H – multiplying by 0.1 and 0.01**	**Addition and subtraction of fractions (3)**	Review equivalent fractions Convert mixed numbers to fractions Adding and subtracting fractions – common denominator /any denominator Adding and subtracting improper fractions and mixed numbers Add and subtract decimals and fractions **H – Add and subtract simple algebraic fractions**	**Developing geometric reasoning (3)**	Properties of angles at a point, angles at a point on a straight line and vertically opposite angles Properties of angles in a triangle and quadrilaterals **H – Derive and use angle sum in any polygon** **H – Investigate parallel lines** **H.- Simple angle proofs**	**Sets and probability (2)**	Create Venn diagrams Union and intersection of sets Language of probability Sample space diagrams for a single event Probability scale Calculate probabilities of a simple event Sum of probabilities is 1 **H – Complement of sets**
	Equality and equivalence (2)	Meaning of equality and equivalence Simplify expressions with like terms Solve 1 step equations			**Fractions & percentages of amounts (1)**	Fractions of amounts Find percentages of amounts – mental methods and calculator methods Use given fractions to find the whole, other fractions **H – explore percentages over 100% and fractions greater than 1**					**Prime numbers and proof (2)**	Number definitions – multiple, factor, prime, square and triangular numbers HCF and LCM Product of prime factors Make and test conjectures and use counter examples to disprove a conjecture **H – Use Venn diagrams to find HCF and LCM**

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	Proportional Reasoning		**Representations**		**Algebraic techniques**		**Developing Number**		**Developing Geometry**		**Reasoning with Data**	
Year 8	**Ratio and Scale (2)**	Ratio notation Solve problems in the form 1:n, n:1 and m:n Divide in a given ratio Simplify fractions Compare ratio and fractions Understand Pi as a ratio **H – express ratio in the form 1:n** **H –Gradient as a ratio**	**Working in the Cartesian plane (3)** **To include Test in Week 9**	Coordinates in all 4 quadrants Draw lines parallel to the axes Recognise and use lines of the form $y = x, y = kx, y = x + a$ Link $y = kx$ to direct proportion problems Graphs with a negative gradient Link graphs to linear sequences Plot graphs of the form $y = mx + c$ Gradient of lines in the form $y = kx$ Non-linear graphs **H –mid-point of a line segment**	**Brackets, equation and inequalities (4)**	Form algebraic expressions Directed number with algebra Multiply out/factorise single bracket Expand multiple single brackets and simply the expression Form and solve equations with brackets Form and solve inequalities Identify and use formulae, expressions, identities and equations **H – Expand a pair of binomials** **H – Form and solve equations and inequalities with unknowns on both sides**	**Fractions and percentages (3)**	Key fractions decimals and percentages Fractions, decimals and percentages of an amount without a calculator/with a calculator Convert between decimals and percentages greater than 100% Percentage decrease and increase with a multiplier Express one number as a fraction or a percentage of another without a calculator/calculator Percentage change Solve percentage problems H - **Find the original amount given the percentage less than 100%/greater than 100%** H - **Choose appropriate methods to solve complex percentage problems**	**Angles in parallel lines and polygons (3)** **To include test in week 30**	Parallel lines and the transversal Alternate and corresponding angles, interior, alternate and corresponding angles Solve complex problems with parallel line angles Construct triangles and special quadrilaterals Properties of special quadrilaterals, calculate with sides and angles, properties of diagonals of quadrilaterals Sum of the interior and exterior angles in any polygon **H- prove simple geometric facts** **H – construct angle bisectors, perpendicular bisector of a line segment**	**The Data Handling Cycle (4)**	Statistical enquiry Questionnaires Draw and interpret – pictograms, bar charts, vertical line charts, multiple bar charts, pie charts and line graphs Choose an appropriate diagram for a set of data Represent and interpret grouped quantitative data Find and interpret the range Compare distributions using charts Misleading graphs
	Multiplicative change (2)	Direct proportion Conversion graphs Convert between currencies Relationships between similar shapes Scale factors and draw and interpret scale diagrams Interpret maps using ratio and scale factors **H –direct proportion graphs**	**Representing data (2)**	Scatter graphs and linear correlation Line of best fit Identify non-linear relationships and different types of data Ungrouped and grouped frequency tables Represent grouped discrete data and continuous data grouped into equal classes Two-way tables	**Sequences (1)**	Generate sequences given a rule in words or a simple algebraic rule Generate sequences given a complex algebraic rule Find the nth term for a linear sequence	**Standard Index Form (2)**	Positive and negative powers of 10 Standard form - compare and order numbers, mental methods and calculator methods Add, subtract, multiply and divide numbers in standard form **H –negative indices/fractional indices**	**Area of Trapezia and circles (2)**	Calculate area of triangles, rectangles, parallelograms and trapeziums Perimeter and area of compound shapes (including shapes with semi-circles) Area of a circle and part circle using calculator and non-calculator methods	**Measures of location (2)**	Understand and use the mean, median and mode Choose the appropriate average Identify outliers Compare distributions using averages and the range **H – calculate the mean from ungrouped and grouped frequency tables**
	Multiplying and dividing fractions (2)	Multiply fractions by an integer Product of a pair of unit fractions/any pair of fractions Divide a fraction by a unit fraction The reciprocal Divide any pair of fractions Multiply and divide improper and mixed fractions Multiply and divide algebraic fractions	**Tables and probability (1)**	Sample space diagrams with more than 1 event Find the probability from sample space diagrams, 2-way tables and Venn diagrams Product rule for finding outcomes	**Indices (1)**	Add and subtract expressions with indices Simplify algebraic expressions by multiplying or dividing indices Use the addition and subtraction laws for indices **H – Explore powers of powers**	**Number Sense (1)**	Rounding numbers – powers of 10, 1 significant figure, decimal places Estimation Order of operations Calculate with money Convert metric lengths and units of weight and capacity Problems using time and the calendar **H – error interval notation** **H – convert metric units of area and volume**	**Symmetry & reflection (1)**	Recognise line symmetry Reflect shapes in horizontal/vertical and diagonal lines (shapes touching and not touching the line)		

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	Reasoning with Algebra		**Constructing in 2 and 3 dimensions**		**Reasoning with Number**		**Reasoning with Geometry**		**Reasoning with Proportion**		**Representations**	
Year 9	**Straight line graphs (2)**	Review use of tables of values, lines parallel to the axes and also $y = x$ and $y = -x$ Compare gradients and intercepts Understand and use $y = mx + c$, including finding the equation of the line from a graph Gradients and intercepts of real-life graphs **H – writing equations in the form $y = mx + c$** **H – explore perpendicular lines** **H – Model real life graphs using inverse proportion**	**To include Test in Week 8** **Three dimensional shapes (3)**	Names of 2D and 3D shapes Recognise prisms (language of edges and vertices) Nets of cuboids and 3D shapes Plans and elevations Review area of 2D shapes Surface area – cubes, cuboids, triangular prisms, cylinder Volume of cubes, cuboids, prisms and cylinders **H – explore volume of comes, pyramids and spheres**	**To include test in Week 16 Numbers (2)**	Review – working with directed number, HCF and LCM, adding, subtracting, multiplying and dividing fractions, standard form Problems with integers, fractions and decimals Identify integers, real and rational numbers **H – surds**	**Deduction (2)**	Review angles in parallel lines Solve angle problems - using chains of reasoning, with algebra Conjectures with angles and shapes **H – link constructions and geometrical reasoning**	**Enlargement and similarity (2)**	Recognise enlargement and similarity Enlarge a shape – by positive scale factor (integer from a point and fractional) Similar shapes – missing sides and angles **H – enlarge a shape by negative scale factor** **H – problems with similar triangles** **H – explore ratios in right angled triangles**	**Probability (2)**	Review single event probability Relative frequency (including convergence) Expected outcomes Independent events Diagrams to calculate probabilities (including two-way tables, Venn diagrams, tree diagrams) **H – tree diagrams (and to solve without replacement problems)**
	Forming and solving equations (2)	Review understanding of solving 1 and 2 step equations and inequalities, including with brackets Inequalities with negative numbers Equations and inequalities with unknowns on both sides Rearranging formulae – 1 step and 2 step **H – Rearrange complex formulae**	**Constructions and Congruency (3)**	Review drawing and measuring angles, scale drawing, constructing triangles Standard loci – from a point, from a straight line, equidistant from 2 points, distance from 2 lines Constructions – perpendicular bisector, perpendicular bisector from a point, perpendicular to a point, angle bisector Identify congruent shapes Explore and identify congruent triangles	**Using percentages (2)**	Review - equivalent fractions, decimals and percentages, percentage increase and decrease, change as a percentage Recognise and solve percentage problems – calculator and non-calculator **H – problems with repeated percentage change**	**Rotation and translation (2)**	Rotational symmetry Compare and contrast rotational symmetry with line symmetry Rotate a shape – about a point on a shape, about a point not in a shape Translation Compare the rotation and reflection of shapes **H – find the results of a series of transformations**	**Solving ratio & prop problems (2)**	Review - direct proportion, conversion graphs, ratio problems Inverse proportion problems Solve best buy problems **H – graphs of inverse relationships** **H – problems involving ratio and algebra**	**Algebraic Representation (2)**	Draw and interpret quadratic graphs Interpret graphs – reciprocal and piece-wise Represent inequalities (number line, graphically shaded regions) **H – graphs of simultaneous equations**
	Testing conjectures (2)	Review knowledge of factors, multiples and primes True or false statements Developing reasoning skills for always, sometimes and never statements Introduction to the show that method Conjectures about number/algebra – introduction to proof Expand a pair of binomials Introduction to formal proofs			**Maths and money (2)**	Problems with bills and bank statements Calculate simple and compound interest Solve problems with valued added tax, exchange rates and unit pricing Calculate wages and taxes	**Pythagoras (2)**	Review squares and square roots Identify and calculate the hypotenuse of a right-angled triangle Determine whether a triangle is non-right angled Calculate missing sides in a non-right-angled triangle Pythagoras' theorem on the coordinate axes Explore proofs of Pythagoras's theorem **H – Pythagoras' theorem in 3D shapes**	**Rates (2)**	Speed, distance and time problems – calculator and non-calculator Distance time graphs Density, mass and volume problems Flow problems and graphs Rates of change (including units) **H – convert compound units**	**End of year revision and assessment**	

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	Similarity		**Developing Algebra**		**Geometry**		**Proportions and Proportional Change**		**Delving into Data Using Number**		**Using Number Expressions**	
Year 10	**Congruence, similarity and enlargement (3)**	Review - enlargement, parallel line rules to find missing angles Similar shapes – identify similar shapes, missing sides and angles in similar shapes, similar triangles Difference between congruence and similarity Congruent triangles **H – enlarge shape by negative scale factor** **H – Area and volume of similar shapes** **H – proof for congruent triangles** **H – mixed problems similar shapes**	**To include Test in Week 8 Representing solutions of equations and inequalities (4)**	Review – form and solve one and two-step equations and inequalities, straight line graphs Understand meaning of a solution Solutions to inequalities on a number line Solve equations using straight line graphs Form and solve equations and inequalities with unknowns on both sides (including brackets, fractional expressions) **H - Set notation to show solutions to inequalities** **H - Represent solutions to single/multiple inequalities on a graph** **H - Factorisation to solve quadratic equations** **H – Solve quadratic inequalities in 1 variable**	**Angles and bearings (2)**	Review – basic angle rules (at a point, angles at a point on a straight line, vertically opposite angles Review angle facts for parallel lines, angles in quadrilaterals, triangles and other regular polygons Understand and use bearings	**Ratios and fractions (2)**	Review formal methods for working with simplifying ratio, ratio of amounts and fraction arithmetic, including fractions of amounts Review using ratios, including with mixed units Review best buy problems Relate ratios to fractions Understand and use proportion as equality of ratios Express a multiplicative relationship between two quantities as a ratio or a fraction **H – Area and volume ratios**	**Collecting, representing and interpreting data (4)**	Review finding the averages and spread of data, statistics diagrams to compare distributions, correlation and the line of best fit Understand the dangers of extrapolation Understand sampling methods and the possible limitations Construct and interpret frequency polygons Construct and interpret tables and line graphs for time series data Evaluate measures of location and dispersion (including outliers) Use statistical diagrams and measure to compare distributions **H - construct and interpret diagrams for grouped data – histograms equal and unequal class widths), cumulative frequency curves,** **H – box plots** **H – use quartiles and the inter-quartile range**	**Types of number and sequences (2)** **To include Mocks in wk 35**	Review factors, multiples, primes and prime factorisation Review understanding of arithmetic and geometric sequences including recognising key sequences (triangular numbers, square numbers) Review using term to term rule, position to term rule and the nth term for linear sequences **H – Find the nth term for quadratic sequences**
	Trigonometry (3)	Review Pythagoras' theorem Explore ratios in similar right-angled triangles Work fluently with the hypotenuse, opposite and adjacent sides Use the trigonometric ratios to calculate missing sides and angles Solve problems requiring trigonometry Know and use exact values of key angles **H – trigonometry in 3D shapes** **H – use of formula for area of non-right-angled triangles** **H – Sine and Cosine rules to find angles and sides**	**Simultaneous equations (4)**	Determine whether (x, y) is a solution to a pair of linear simultaneous equations Linear simultaneous equations – by substitution, graphically, elimination method Form and solve a pair of linear simultaneous equations **H – Determine whether (x, y) is a solution to both a linear and a quadratic equation** **H – Solve simultaneous equations (one linear, one quadratic) – graphically, algebraically** **H – solve a pair of simultaneous equations with a third unknown**	**Working with circles (2)**	Review area and circumference Name parts of a circle and perform related calculations (arc length and area of a sector) Find areas and volumes related to circles – cylinder, cone, sphere, hemisphere **H – derive and prove the standard circle theorems** **H – understand and use the equation of a circle**	**Percentages and Interest (2)**	Review conversion between fractions, decimals and percentage, finding percentages and percentage changes as a fraction or a decimal, finding one number as a percentage of another, simple and compound interest Evaluate exponential change (e.g. depreciation) Solve finding the original value problems	**Non-calculator methods (2)**	Review use of four operation with integers, decimals and fractions with or without context Working with exact answers (for example with area and volume, exact trigonometric values, exact answers in terms of π) Evaluate calculations involving percentages Solve problems involving financial mathematics	**Indices and roots(2)**	Review positive integer powers and associated real roots including recognising powers of 2, 3 4 and 5 Review the rules of indices Review knowledge of numbers in standard form and be able to perform calculations **H – Calculate exactly with surds. Simplify surds and rationalise the denominator** **H – Understand and use fractional indices** **H – work with rational and irrational numbers, including recurring decimals into fractions** **H – work with accuracy including upper and lower bounds**
					Vectors (2)	Review translations as 2D vectors Vector notation Vector arithmetic Diagrammatic and column representations of vectors **H – Construct geometric proofs and arguments with vectors**	**Probability (2)**	Review single event probability, independent events, tree diagrams and include tree diagrams without replacement Review comparing theoretical and experimental probabilities, finding probabilities from frequency trees, tables and Venn diagrams Understand and work with mutually exclusive events **H – calculate and interpret conditional probability (using expected frequencies with two-way tables, tree diagrams and Venn diagrams)**			**Manipulating Expressions (2)**	Review collecting like terms, simplifying expressions involving sums, products and powers, laws of indices

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	Graphs		**Algebra**		**Reasoning**		**Revision and Communication**		**Revision**	**Examinations**
Year 11	**Gradients and lines (2)**	Review knowledge of straight lines, including the gradient and intercept, parallel lines Find the equation of straight lines in the form $y = mx + c$ Find the equation of a line through 2 given points or through 1 point and a given gradient Recognise, sketch and interpret graphs of linear functions **H – understand and use equations of perpendicular lines**	**Expanding and Factorising (2)**	Review expanding a single bracket and binomials Review factorising into a single bracket Factorise quadratics in the form $x^2 + bx + c$ including the difference of two squares Solve quadratic equations Simplify complex algebraic expressions including algebraic fractions **H – solve quadratic equations by completing the square and using the quadratic formula** **H – factorise quadratics in the form $ax^2 + bx + c$**	**Multiplicative (2)**	Review enlargement and scale factors Review direct proportion Work with inverse proportion Calculate with pressure and density Determine whether a problem requires additive or multiplicative reasoning **H – solve problems involving variation with powers**	**Transforming & Constructing (2)**	Review transformations of shapes, including linking to types of symmetry Review the standard constructions using a ruler and compass or ruler and protractor Review standard loci Solve loci problems **H – understand and use trigonometric graphs** **H – sketch translations and reflections of the graph of a given function**		
	Non-linear graphs (2)	Plot and read from quadratic graphs Understand and find roots, intercepts, turning points of quadratic functions graphically Plot cubic and reciprocal graphs (also in context) Recognise, sketch and interpret graphs of quadratic functions **H – deduce turning points by completing the square** **H – Understand and use exponential graphs** **H – find the equation of the tangent to a curve**	**Changing the subject (2)**	Review solving linear equations Change the subject of a formula including perimeter, area and volume formulae Find the volume of a pyramid **H – change the subject of a formula where the subject appears more than once** **H – solve equations by iteration**	**Geometric (2)**	Review angle facts focusing on the language of reasons and chains of reasoning Review Pythagoras' theorem and trigonometry **H – construct formal geometric proofs including for circle theorems**	**Listing and describing (2)**	Review sample space diagrams and probability Review using Venn diagrams Review using data to compare distributions Work with organised lists Work with plans and elevations **H – Product rule for counting**		
	Using graphs (2)	Reflect shapes in a given line Construct and interpret speed, distance and time graphs Construct and interpret real life graphs **H - estimate the area under a curve**	**Functions (2)**	Find inputs and outputs of functions Show that algebraic expressions are equivalent Solve problems using kinematic formulae **H – work with composite and inverse functions**	**Algebraic (2)**	Review simplification of complex expressions and finding the nth term rule Work with complex indices 'Justify' style questions – for example justify why a number is/is not in a given sequence **H – construct formal algebraic proofs**	**Show that . . . (2)**	Illustrate equivalence – numerically and algebraically 'Justify your answer' style questions Use the language of angle rules to answer questions Use the conditions for congruent triangles in exam style questions H – formal proof with congruent triangles		