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| **Year 7** | **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** | |
| **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 | **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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| **Year 8** | **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)** | |
| **Proportional Reasoning** | | **Representations** | | **Algebraic techniques** | | **Developing Number** | | **Developing Geometry** | | **Reasoning with Data** | |
| **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)** | Coordinates in all 4 quadrants  Draw lines parallel to the axes  Recognise and use lines of the form  Link to direct proportion problems  Graphs with a negative gradient  Link graphs to linear sequences  Plot graphs of the form  Gradient of lines in the form  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)** | 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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| **Year 9** | **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)** | |
| **Reasoning with Algebra** | | **Constructing in 2 and 3 dimensions** | | **Reasoning with Number** | | **Reasoning with Geometry** | | **Reasoning with Proportion** | | **Representations** | |
| **Straight line graphs (2)** | Review use of tables of values, lines parallel to the axes and also and  Compare gradients and intercepts  Understand and use , including finding the equation of the line from a graph  Gradients and intercepts of real-life graphs  **H – writing equations in the form**  **H – explore perpendicular lines**  **H – Model real life graphs using inverse proportion** | **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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| **Year 10** | **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)** | |
| **Similarity** | | **Developing Algebra** | | **Geometry** | | **Proportions and Proportional Change** | | **Delving into Data**  **Using Number** | | **Using Number**  **Expressions** | |
| **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** | **Equations and inequalities** | 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 angles in quadrilaterals, triangles and other regular polygons  Understand and use bearings  **H – Sine and Cosine rules to find angles and sides** | **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)** | 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  **H – trigonometry in 3D shapes**  **H – use of formula for area of non-right-angled triangles** | **Simultaneous equations (4)** | Determine whether 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 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 first four 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  **H – Solve problems involving growth and decay** | **Non-calculator methods (2)** | Review use of four operation with integers & decimals with or without context  Working with exact answers (for example with area and volume, exact trigonometric values, exact answers in terms of )  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 four operations with fractions  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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| **Year 11** | **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)** |
| **Graphs** | | **Algebra** | | **Reasoning & QLA from PPE** | | **Revision and Communication** | | **Revision** | **Examinations** |
| **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  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 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** | **Multiplicative (2)** | **H – solve problems involving variation with powers** | **Transforming & Constructing (2)** | **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)** | **H – construct formal geometric proofs including for circle theorems** | **Listing and describing (2)** | **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)** | **H – construct formal algebraic proofs**  **All groups to follow bespoke plan based on QLA results from November PPE** | **Show that . . . (2)**  **All groups to follow new bespoke plan based on February PPE** | **H – formal proof with congruent** **triangles** |  |