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| YEAR 7 | AUTUMN TERM | **AUTUMN TERM 1: NUMBER 1 (4 weeks)**<br>▪ Know what even numbers, odd numbers, factors, multiples, primes, squares and square roots are and how to find them.<br>▪ Find the Highest Common Factor by listing factors and/or using Venn diagrams.<br>▪ Find the Lowest Common Multiple by listing multiples.<br>▪ Use prime factorisation to produce a unique set of prime factors of a number and list them in product form.<br>▪ Use index notation in prime factorisation.<br>▪ Find the HCF and LCM by using prime factorisation and Venn diagrams.<br>**ALGEBRA 1 (4 weeks)**<br>▪ Finding unknown numbers<br>▪ Introduction of formulae using rules in words<br>▪ Simplifying expressions by collecting terms<br>▪ Substitution into an expression or formula<br>▪ Learning vocabulary; Term, Variable, Expression<br>▪ Rules of algebra; Using algebraic shorthand<br>▪ Multiplication and division of expressions<br>▪ Expanding a term by a bracket<br>▪ Using algebra in shapes<br>**AUTUMN TERM 2: NUMBER 2**<br>**ALGEBRA 1 cont.**<br>▪ Factorisation<br>▪ Expanding products of two or more binomials<br>▪ Use of index notation<br>**GEOMETRY 1 (5 weeks)**<br>▪ Measuring lengths, perimeters and areas<br>▪ Reading scales<br>▪ Names and properties of 2D shapes<br>▪ Names and properties of 3D shapes<br>▪ Perimeter and area of a rectangle<br>▪ Area of triangles, parallelograms, trapeziums and compound shapes<br>▪ Volume and surface area of cubes, cuboids and prisms<br>▪ Converting between metric units for length, area, volume and capacity.<br>▪ Circles; Naming parts, Circumference and Area<br>▪ Length of an arc and area of a sector<br>▪ Volume and surface area of prisms including cylinders |

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| | SRPING TERM | **SPRING TERM 1: NUMBER 1**<br>**STATISTICS 1 (4 weeks)**<br>▪ What is data? Vocabulary; Survey, sample, census, etc<br>▪ Data collection; Surveys<br>▪ Tally tables<br>▪ Frequency tables<br>▪ Grouping data<br>▪ Interpreting and drawing Two Way tables<br>▪ Interpreting and drawing statistical charts such as vertical line<br>▪ graphs, bar charts, pictograms.<br>▪ Reading information from tables<br>▪ Drawing and interpreting pie charts<br>▪ Drawing and interpreting scatter diagrams<br>▪ Understanding the concept of bivariate data,<br>▪ correlation and the line of best fit.<br>**SPRING TERM 2: NUMBER 2**<br>▪ Identify equivalent fractions and use them to convert between fractions, decimals and percentages and order them.<br>▪ Use standard form notation to write and order large numbers.<br><br>**ALGEBRA 2 (4 weeks)**<br>▪ Continue number sequences<br>▪ Describe rules for sequences<br>▪ Continue sequences from pictures<br>▪ Finding terms from patterns<br>▪ Using nth term formula to find terms<br>▪ Use patterns to generate the nth term<br>▪ Recognise arithmetic sequences<br>▪ Recognise geometric sequences<br>▪ Quadratic Sequences<br>▪ Limits of Sequences |

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| | SUMMER TERM | **SUMMER TERM 1: NUMBER 1**<br>**GEOMETRY 2 (4 weeks)**<br>▪ Measuring and drawing angles<br>▪ Names of angles and lines.<br>▪ Calculating angles using basic angle rules<br>▪ Scale Drawings<br>▪ Calculating interior & exterior angles polygons.<br>▪ Alternate and corresponding angles<br>▪ Geometrical properties of polygons<br>▪ Geometrical proof<br>▪ Bearings<br>**STATISTICS 2 (4 weeks)**<br>▪ Finding the mode of a set of data<br>▪ Finding the median of a set of data<br>▪ Finding the range of a set of data<br>**STATISTICS 2 cont.**<br>▪ Finding the mean of a set of data<br>▪ Understanding which average to use<br>▪ Finding the Assumed mean<br>▪ Finding the averages from frequency table including grouped frequency<br>▪ To be able to calculate quartiles, interquartile range and outliers.<br>▪ To be able to analyse a set of data.<br>▪ To be able to compare two sets of data.<br>▪ To be able to execute a statistical investigation involving data analysis. |

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| YEAR 8 | AUTUMN TERM | **AUTUMN TERM 1: NUMBER 1 (4 weeks)**<br>**Number 3 (4 weeks)**<br>▪ Know basic number facts such as times tables, number bonds and x/÷ by 10,100 and 1000.<br>▪ Column method of addition and subtraction of whole numbers.<br>▪ Long multiplication and division of whole numbers.<br>▪ Addition and subtraction of fractions with the same denominator.<br>▪ Column method of addition and subtraction of decimals.<br>▪ Multiplication and division of decimals. Understanding decimal point.<br>▪ Addition, subtraction, multiplication and division of fractions.<br>▪ Addition, subtraction, multiplication and division of negative numbers.<br>▪ Understand order of operations as a convention.<br>▪ Multiplying and dividing by powers of ten.<br>▪ Identify fractions, decimals and percentages as operators i.e. find fractions, decimals and percentages of amounts.<br>▪ Percentage increase and decrease.<br>▪ Simple and compound interest.<br>**ALGEBRA 3 (4 weeks)**<br>▪ Coordinates in 4 Quadrants.<br>▪ Naming horizontal and vertical graphs.<br>▪ Function machines.<br>▪ Using letters for functions.<br>▪ Mappings to graphs.<br>▪ Using mapping to find equation of line/function.<br>▪ Using equation of a line to produce the mapping and graph.<br>▪ Finding the gradient and y intercept of a straight line.<br>▪ Using the gradient and y intercept to produce the equation of a line.<br>▪ Solving problems involving straight line graphs.<br>▪ Finding the midpoint of a line segment.<br>**AUTUMN TERM 2: NUMBER 2**<br>**ALGEBRA 3 cont.**<br>▪ Real life graphs.<br>▪ Quadratic Graphs<br>▪ Cubic Graphs<br>▪ Solve simultaneous equations approximately based on graphical representations.<br>**Geometry 3 (5 weeks)**<br>▪ Lines of symmetry and Rotational symmetry<br>▪ Combinations of transformations; Translations, reflections and rotations<br>▪ Congruency<br>▪ Tessellations<br>▪ Enlargements<br>▪ Planes of symmetry<br>▪ Fractional and negative scale factors |

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| | SRPING TERM | **SPRING TERM 1: NUMBER 1**<br>**Statistics 3 (4 weeks)**<br>▪ Probability words; Impossible, certain etc<br>▪ The probability scale<br>▪ Probability terminology; Bias, random, events.<br>▪ Calculating theoretical probabilities<br>▪ Experimental probability/ Relative frequency for estimating probabilities<br>▪ Probabilities add up to 1.<br>▪ Two way tables<br>▪ Sample space diagrams<br>▪ Venn Diagrams, Unions and intersections of Sets<br>▪ Mutually exclusive and exhaustive events<br>▪ Combination events and Tree Diagrams<br>**SPRING TERM 2: NUMBER 2**<br>**Number 4 cont.**<br>▪ Calculate possible errors and express them using upper and lower bound notation $a < x \leq b$.<br>**Algebra 4 (4 weeks)**<br>▪ Using formulae<br>▪ Solving equations with terms on one side only<br>▪ Using inverse functions to solve equations<br>▪ Solving equations with fractions and brackets<br>▪ Solving equations with terms on both sides<br>▪ Learning vocabulary; Equation, Identity, Formulae<br>▪ Forming equations to solve problems<br>▪ Rearranging formula to change the subject<br>▪ Solving of simultaneous equations by elimination or substitution method<br>▪ Solving inequalities.<br>▪ Solving equations involving $x^2$ by making x the subject. |
| | SUMMER TERM | **SUMMER TERM 1: NUMBER 1**<br>**Geometry 4 (4 weeks)**<br>▪ Constructing triangles<br>▪ 3D Shapes; drawing them on square grids, isometric grids and nets<br>▪ 3D Shapes; Drawing plans and elevations<br>▪ Constructions; Perpendicular bisector and angle bisector<br>▪ Shape and ratio<br>▪ Loci<br>▪ Pythagoras' Theorem<br>▪ Trigonometry<br>▪ Similar triangles<br>**Ratio and Proportion (4 weeks)**<br>▪ Find ratios and proportions from pictures.<br>▪ Use ratio to convert between units.<br>▪ Write ratios and simplify.<br>▪ Splitting a quantity in a ratio.<br>**Ratio and Proportion cont.**<br>▪ Use multiplicative reasoning to solve ratio problems.<br>▪ Relate scale factors and enlargement to ratio and proportion problems.<br>▪ Relate ratio and proportion problems to fraction notation.<br>▪ Relate ratio and proportion problems to percentages.<br>▪ Relate direct and inverse proportion problems to linear functions and graphs (conversion graphs).<br>▪ Ratio for compound units. |

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| YEAR 9 HIGHER GCSE | AUTUMN TERM | **AUTUMN TERM 1: NUMBER 1**<br>**NUMBER:**<br>▪ Work out the total number of ways of performing a series of tasks.<br>Estimate an answer.<br>▪ Use place value to answer questions.<br>▪ Write a number of the product of its prime factors.<br>▪ Find the HCF and LCM of two numbers.<br>▪ Use powers and roots in calculations.<br>▪ Multiply and divide using index laws.<br>▪ Work out a power raised to a power.<br>▪ Use negative indices.<br>▪ Use fractional indices.<br>▪ Write a number in standard form.<br>▪ Calculate with numbers in standard form. Understand the difference between rational and irrational numbers.<br>▪ Simplify a surd. Rationalise a denominator.<br>**AUTUMN TERM 2: NUMBER 2**<br>ALGEBRA:<br>▪ Use the rules of indices to simplify algebraic expressions.<br>Expand brackets.<br>▪ Factorise algebraic expressions.<br>▪ Solve equations involving brackets and numerical fractions.<br>Use equations to solve problems.<br>▪ Substitute numbers into formulae.<br>▪ Rearrange formulae.<br>▪ Distinguish between expressions, equations, formulae and identities.<br>▪ Find a general formula for the nth term of an arithmetic sequence.<br>▪ Determine whether a particular number is a term of a given arithmetic sequence.<br>▪ Solve problems using geometric sequences.<br>▪ Work out terms in Fibonnaci-like sequences.<br>▪ Find the nth term of a quadratic sequence.<br>▪ Expand the product of two brackets.<br>▪ Use the difference of two squares.<br>▪ Factorise quadratics of the form x2 + bx + c. |

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| | SRPING TERM | **SPRING TERM 1: NUMBER 1**<br>**INTERPRETING AND REPRESENTING DATA:**<br>▪ Construct and use back-to-back stem and leaf diagrams.<br>▪ Construct and use frequency polygons and pie charts.<br>▪ Plot and interpret time series graphs.<br>▪ Use trends to predict what might happen in the future.<br>▪ Plot and interpret scatter graphs.<br>▪ Determine whether or not there is a linear relationship between two variables.<br>▪ Draw a line of best fit on a scatter graph.<br>▪ Use the line of best fit to predict values.<br>▪ Decide which average is best for a set of data.<br>▪ Estimate the mean and range from a grouped frequency table.<br>▪ Find the modal class and the group containing the median<br>▪ Construct and use two-way tables.<br>▪ Choose appropriate diagrams to display data.<br>▪ Recognise misleading graphs.<br>**SPRING TERM 2: NUMBER 2**<br>**FRACTIONS AND PERCENTAGES:**<br>▪ Add, subtract, multiply and divide fractions and mixed numbers.<br>▪ Find the reciprocal of an integer, decimal or fraction.<br>▪ Write ratios in the form 1 : n or n : 1.<br>▪ Compare ratios.<br>▪ Find quantities using ratios.<br>▪ Solve problems involving ratios.<br>▪ Convert between currencies and measures.<br>▪ Recognise and use direct proportion.<br>▪ Solve problems involving ratios and proportion.<br>▪ Work out percentage increases and decreases.<br>▪ Solve real-life problems involving Percentages.<br>▪ Calculate using fractions, decimals and percentages.<br>▪ Convert a recurring decimal to a fraction. |

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| | SUMMER TERM | **SUMMER TERM 1: NUMBER 1**<br>**ANGLES AND TRIGONOMETRY:**<br>▪ Derive and use the sum of angles in a triangle and in a quadrilateral.<br>▪ Derive and use the fact that the exterior angle of a triangle is equal to the sum of the two opposite interior angles.<br>▪ Calculate the sum of the interior angles of a polygon.<br>▪ Use the interior angles of polygons to solve problems.<br>▪ Know the sum of the exterior angles of a polygon.<br>▪ Use the angles of polygons to solve problems.<br>▪ Calculate the length of the hypotenuse in a right-angled triangle.<br>▪ Calculate the length of a shorter side in a right-angled triangle/.<br>▪ Solve problems using Pythagoras' theorem.<br>▪ Use trigonometric ratios to find lengths in a right-angled triangle.<br>▪ Use trigonometric ratios to solve problems.<br>▪ Use trigonometric ratios to calculate an angle in a right-angled triangle.<br>▪ Find angles of elevation and angles of depression.<br>▪ Use trigonometric ratios to solve problems.<br>▪ Know the exact values of the sine, cosine and tangent of some angles.<br>**SUMMER TERM 2: NUMBER 2**<br>**GRAPHS:**<br>▪ Draw the graph of y=, x=, y=x, y=-x<br>▪ Draw the graph of y=mx + c.<br>▪ Find the gradient and y-intercept from a linear equation.<br>▪ Rearrange an equation into the form y = mx + c.<br>▪ Compare two graphs from their equations.<br>▪ Plot graphs with equations ax + by = c.<br>▪ Sketch graphs using the gradient and intercepts.<br>▪ Find the equation of a line, given its gradient and one point on the line.<br>▪ Find the gradient of a line through two points.<br>▪ Draw and interpret distance–time graphs.<br>▪ Calculate average speed from a distance–time graph.<br>▪ Understand velocity–time graphs.<br>▪ Find acceleration and distance from velocity–time graphs.<br>▪ Draw and interpret real-life linear graphs.<br>▪ Recognise direct proportion.<br>▪ Draw and use a line of best fit.<br>▪ Find the coordinates of the midpoint of a line segment.<br>▪ Find the gradient and length of a line segment.<br>▪ Find the equations of lines parallel or perpendicular to a given line. |

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| YEAR 9 FOUNDATION GCSE | AUTUMN TERM | **AUTUMN TERM 1: NUMBER 1**<br>**NUMBER:**<br>▪ Use priority of operations with positive and negative numbers<br>▪ Simplify calculations by cancelling.<br>▪ Use inverse operations.<br>▪ Round to a given number of decimal places.<br>▪ Multiply and divide decimal numbers.<br>▪ Write decimal numbers of millions.<br>▪ Round to a given number of significant figures. Estimate answers to calculations.<br>▪ Use one calculation to find the answer to another.<br>▪ Recognise 2-digit prime numbers.<br>▪ Find factors and multiples of numbers.<br>▪ Find common factors and common multiples of two numbers.<br>▪ Find the HCF and LCM of two numbers by listing.<br>▪ Find square roots and cube roots.<br>▪ Recognise powers of 2, 3, 4 and 5.<br>▪ Understand surd notation on a calculator.<br>▪ Use index notation for powers of 10.<br>▪ Use index notation in calculations.<br>▪ Use the laws of indices.<br>**AUTUMN TERM 2: NUMBER 2**<br>ALGEBRA:<br>▪ Use correct algebraic notation.<br>▪ Write and simplify expressions.<br>▪ Use the index laws.<br>▪ Multiply and divide expressions.<br>▪ Substitute numbers into expressions.<br>▪ Recognise the difference between a formula and an expression.<br>▪ Substitute numbers into a simple formula.<br>▪ Expand brackets.<br>▪ Simplify expressions with brackets.<br>▪ Substitute numbers into expressions with brackets and powers.<br>▪ Recognise factors of algebraic terms.<br>▪ Factorise algebraic expressions.<br>▪ Use the identity symbol ≡ and the not equals symbol ≠<br>▪ Write expressions and simple formulae to solve problems.<br>▪ Use maths and science formulae. |

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| | SRPING TERM | **SPRING TERM 1: NUMBER 1**<br>**GRAPHS, TABLES AND CHARTS:**<br>Designing tables and data collection sheets.<br>Reading data from tables.<br>▪ Use data from tables.<br>▪ Design and use two-way tables.<br>▪ Plot and interpret time series graphs.<br>▪ Use trends to predict what might happen in the future.<br>▪ Construct and interpret stem and leaf and back-to-back stem and leaf diagrams.<br>▪ Draw and interpret pie charts.<br>▪ Plot and interpret scatter graphs.<br>▪ Determine whether or not there is a relationship between sets of data.<br>▪ Draw a line of best fit on a scatter graph.<br>▪ Use the line of best fit to predict values.<br>**SPRING TERM 2: NUMBER 2**<br>**FRACTIONS AND PERCENTAGES:**<br>▪ Add and subtract fractions.<br>▪ Use fractions to solve problems.<br>▪ Find a fraction of a quantity or measurement.<br>▪ Use fractions to solve problems.<br>▪ Multiply whole numbers, fractions and mixed numbers.<br>▪ Simplify calculations by cancelling.<br>▪ Divide a whole number by a fraction.<br>▪ Divide a fraction by a whole number or a fraction.<br>▪ Convert fractions to decimals and vice versa.<br>▪ Use decimals to find quantities.<br>▪ Write one number as a fraction of another.<br>▪ Convert percentages to fractions and vice versa.<br>▪ Write one number as a percentage of another.<br>▪ Convert percentages to decimals and vice versa.<br>▪ Find a percentage of a quantity.<br>▪ Use percentages to solve problems.<br>▪ Calculate simple interest.<br>▪ Calculate percentage increases and decreases.<br>▪ Use percentages in real-life situations.<br>▪ Calculate VAT (value added tax) |

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| | SUMMER TERM | **SUMMER TERM 1: NUMBER 1**<br>**EQUATIONS, INEQUALITIES & SEQUENCES:**<br>▪ Understand and use inverse equations.<br>▪ Rearrange simple linear equations.<br>▪ Solve simple linear equations.<br>▪ Solve two-step equations.<br>▪ Solve linear equations with brackets.<br>▪ Solve equations with unknowns on both sides.<br>▪ Solve linear equations with brackets.<br>▪ Solve equations with unknowns on both sides.<br>▪ Solve two-sided inequalities<br>▪ Substitute values into formulae and solve equations.<br>▪ Change the subject of a formula.<br>▪ Know the difference between an expression, an equation, a formula and an identity.<br>▪ Recognise and extend sequences.<br>▪ Use the nth term to generate terms of a sequence.<br>▪ Find the nth term of an arithmetic sequence.<br>**SUMMER TERM 2: NUMBER 2**<br>**ANGLES:**<br>▪ Solve geometric problems using side and angle properties of quadrilaterals.<br>▪ Identify congruent shapes.<br>▪ Understand and use the angle properties of parallel lines.<br>▪ Find missing angles using corresponding and alternate angles.<br>▪ Solve angle problems in triangles.<br>▪ Understand angle proofs about triangles.<br>▪ Calculate the interior and exterior angles of regular polygons.<br>▪ Calculate the interior and exterior angles of polygons.<br>▪ Explain why some polygons fit together and some others do not<br>Solve angle problems using equations.<br>▪ Solve geometrical problems showing reasoning. |

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| YEAR 10 HIGHER GCSE | AUTUMN TERM | **AUTUMN TERM 1.NUMBER 1**<br>**AREA & VOLUME:**<br>▪ Find the perimeter and area of compound shapes.<br>▪ Recall and use the formula for the area of a trapezium.<br>▪ Convert between metric units of area.<br>▪ Calculate the maximum and minimum possible values of a measurement.<br>▪ Convert between metric units of volume.<br>▪ Convert between metric units of volume.<br>▪ Calculate volumes and surface areas of prisms.<br>▪ Calculate the area and circumference of a circle.<br>▪ Calculate area and circumference in terms of π.<br>▪ Calculate the perimeter and area of semicircles and quarter circles.<br>▪ Calculate arc lengths, angles and areas of sectors of circles.<br>▪ Calculate volume and surface area of a cylinder and a sphere.<br>▪ Solve problems involving volumes and surface areas.<br>▪ Solve problems involving pyramids and cones.<br>▪ Calculate volume and surface area of pyramids and cones.<br><br>**AUTUMN TERM 2.NUMBER 2**<br>**TRANSFORMATIONS & CONSTRUCTIONS:**<br>▪ Draw plans and elevations of 3D solids.<br>▪ Reflect a 2D shape in a mirror line.<br>▪ Rotate a 2D shape about a centre of rotation.<br>▪ Describe reflections and rotations.<br>▪ Enlarge shapes by fractional and negative scale factors about a centre of enlargement.<br>▪ Translate a shape using a vector.<br>▪ Carry out and describe combinations of transformations.<br>▪ Draw and use scales on maps and scale drawings.<br>▪ Solve problems involving bearings.<br>▪ Construct triangles using a ruler and compasses.<br>▪ Construct the perpendicular bisector of a line.<br>▪ Construct the shortest distance from a point to a line using a ruler and compasses.<br>▪ Bisect an angle using a ruler and compasses.<br>▪ Construct angles using a ruler and compasses.<br>▪ Construct shapes made from triangles using a ruler and compasses.<br>▪ Draw a locus.<br>▪ Use loci to solve problems. |

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| | SRPING TERM | **SPRING TERM 1. NUMBER 1**<br>**EQUATIONS & INEQUALITIES**<br>▪ Find the roots of quadratic functions.<br>▪ Rearrange and solve simple quadratic equations.<br>▪ Solve more complex quadratic equations.<br>▪ Use the quadratic formula to solve a quadratic equation.<br>▪ Complete the square for a quadratic expression.<br>▪ Solve quadratic equations by completing the square.<br>▪ Solve simple simultaneous equations.<br>▪ Solve simultaneous equations for real-life situations.<br>▪ Use simultaneous equations to find the equation of a straight line.<br>▪ Solve linear simultaneous equations where both equations are multiplied.<br>▪ Interpret real-life situations involving two unknowns and solve them.<br>▪ Solve simultaneous equations with one quadratic equation.<br>▪ Use real-life situations to construct quadratic and linear equations and solve them.<br>▪ Solve inequalities and show the solution on a number line and using set notation.<br>**SPRING TERM 2. NUMBER 2**<br>**PROBABILITY:**<br>▪ Use the product rule for finding the number of outcomes for two or more events.<br>▪ List all the possible outcomes of two events in a sample space diagram.<br>▪ Identify mutually exclusive outcomes and events.<br>▪ Find the probabilities of mutually exclusive outcomes and events.<br>▪ Find the probability of an event not happening.<br>▪ Work out the expected results for experimental and theoretical probabilities.<br>▪ Compare real results with theoretical expected values to see if a game is fair.<br>▪ Draw and use frequency trees.<br>▪ Calculate probabilities of repeated events.<br>▪ Draw and use probability tree diagrams.<br>▪ Decide if two events are independent.<br>▪ Draw and use tree diagrams to calculate conditional probability.<br>▪ Draw and use tree diagrams without replacement.<br>▪ Use two-way tables to calculate conditional probability.<br>▪ Use Venn diagrams to calculate conditional probability.<br>▪ Use set notation. |
| | SUMMER TERM | **SUMMER TERM 1. NUMBER 1**<br>**MULTIPLICATIVE REASONING:**<br>▪ Find an amount after repeated percentage changes.<br>▪ Solve growth and decay problems.<br>▪ Calculate rates.<br>▪ Convert between metric speed measures.<br>▪ Use a formula to calculate speed and acceleration.<br>▪ Solve problems involving compound measures.<br>▪ Use relationships involving ratio.<br>▪ Use direct and indirect proportion.<br>**SUMMER TERM2 .NUMBER 2**<br>**SIMILARITY & CONGRUENCE:**<br>▪ Show that two triangles are congruent.<br>▪ Know the conditions of congruence.<br>▪ Prove shapes are congruent.<br>▪ Solve problems involving congruence.<br>▪ Use the ratio of corresponding sides to work out scale factors.<br>▪ Find missing lengths on similar shapes.<br>▪ Use similar triangles to work out lengths in real life.<br>▪ Use the link between linear scale factor and area scale factor to solve problems.<br>▪ Use the link between scale factors for length, area and volume to solve problems. |

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| YEAR 10 FOUNDATION GCSE | AUTUMN TERM | **AUTUMN TERM 1: NUMBER 1**<br>**AVERAGE & RANGE**<br>▪ Calculate the mean from a list and from a frequency table.<br>▪ Compare sets of data using the mean and range.<br>▪ Find the mode, median and range from a stem and leaf diagram.<br>▪ Identify outliers.<br>▪ Estimate the range from a grouped frequency table.<br>▪ Recognise the advantages and disadvantages of each type of average.<br>▪ Find the modal class.<br>▪ Find the median from a frequency table.<br>▪ Estimate the mean of grouped data.<br>▪ Understand the need for sampling.<br>▪ Understand how to avoid bias.<br>**PERIMETER, AREA & VOLUME:**<br>▪ Calculate the perimeter and area of rectangles, parallelograms and triangles.<br>▪ Estimate lengths, areas and costs.<br>▪ Calculate a missing length, given the area.<br>▪ Calculate the area and perimeter of trapezia.<br>▪ Find the height of a trapezium given its area.<br>▪ Convert between area measures.<br>▪ Calculate the perimeter and area of shapes made from triangles and rectangles.<br>▪ Calculate areas in hectares, and convert between ha and m2.<br>▪ Calculate the surface area of a cuboid.<br>▪ Calculate the surface area of a prism.<br>▪ Calculate the volume of a cuboid.<br>▪ Calculate the volume of a prism.<br>▪ Solve problems involving surface area and volume.<br>▪ Convert between measures of volume.<br>**AUTUMN TERM 2: NUMBER 2**<br>**GRAPHS:**<br>▪ Find the midpoint of a line segment.<br>▪ Recognise, name and plot straight-line graphs parallel to the axes.<br>▪ Recognise, name and plot the graphs of y = x and y = –x.<br>▪ Generate and plot coordinates from a rule.<br>▪ Plot straight-line graphs from tables of values.<br>▪ Draw graphs to represent relationships.<br>▪ Find the gradient of a line.<br>▪ Identify and interpret the gradient from an equation.<br>▪ Understand that parallel lines have the same gradient.<br>▪ Understand what m and c represent in y = mx + c.<br>▪ Find the equations of straight-line graphs.<br>▪ Sketch graphs given the values of m and c.<br>▪ Draw and interpret graphs from real data.<br>▪ Use distance–time graphs to solve problems.<br>▪ Draw distance–time graphs.<br>▪ Interpret rate of change graphs.<br>▪ Draw and interpret a range of graphs.<br>▪ Understand when predictions are reliable.<br>Transformations<br>▪ Translate a shape on a coordinate grid.<br>▪ Use a column vector to describe a translation.<br>▪ Draw a reflection of a shape in a mirror line.<br>▪ Draw reflections on a coordinate grid.<br>▪ Describe reflections on a coordinate grid.<br>▪ Rotate a shape on a coordinate grid.<br>▪ Describe a rotation.<br>▪ Enlarge a shape by a scale factor. |

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| | | ▪ Enlarge a shape using a centre of enlargement.<br>▪ Identify the scale factor of an enlargement.<br>▪ Find the centre of enlargement.<br>▪ Describe an enlargement.<br>▪ Transform shapes using more than one transformation.<br>▪ Describe combined transformations of shapes on a grid. |

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| | SRPING TERM | **SPRING TERM: NUMBER 1**<br>**RATIO & PROPORTION**<br>▪ Use ratio notation.<br>▪ Write a ratio in its simplest form.<br>▪ Solve problems using ratios.<br>▪ Solve simple problems using ratios.<br>▪ Use ratios to convert between units.<br>▪ Write and use ratios for shapes and their enlargements<br>▪ Divide a quantity into 2 parts in a given ratio.<br>▪ Divide a quantity into 3 parts in a given ratio.<br>▪ Solve word problems using ratios.<br>▪ Use ratios involving decimals.<br>▪ Compare ratios.<br>▪ Solve ratio and proportion problems.<br>▪ Use the unitary method to solve proportion problems.<br>▪ Solve proportion problems in words.<br>▪ Work out which product is better value for money.<br>▪ Recognise and use direct proportion on a graph.<br>▪ Understand the link between the unit ratio and the gradient.<br>▪ Recognise different types of proportion.<br>▪ Solve word problems involving direct and inverse proportion<br>▪ Right-angled triangles<br>▪ Understand Pythagoras' theorem.<br>▪ Calculate the length of the hypotenuse in a right-angled triangle.<br>▪ Solve problems using Pythagoras' theorem.<br>▪ Calculate the length of a line segment AB.<br>▪ Calculate the length of a shorter side in a right-angled triangle.<br>▪ Understand and recall the sine ratio in right-angled triangles.<br>▪ Use the sine ratio to calculate the length of a side in a right-angled triangle.<br>▪ Use the sine ratio to solve problems.<br>▪ Use the sine ratio to calculate an angle in a right-angled triangle.<br>▪ Use the sine ratio to solve problems.<br>▪ Understand and recall the cosine ratio in right-angled triangles.<br>▪ Use the cosine ratio to calculate the length of a side in a right-angled triangle.<br>▪ Use the cosine ratio to calculate an angle in a right-angled triangle<br>▪ Use the cosine ratio to solve problems<br>▪ Understand and recall the tangent ratio in right-angled triangles.<br>▪ Use the tangent ratio to calculate the length of a side in a right-angled triangle.<br>▪ Use the tangent ratio to calculate an angle in a right-angled triangle.<br>▪ Solve problems using an angle of elevation or depression.<br>▪ Understand and recall trigonometric ratios in right-angled triangles.<br>▪ Use trigonometric ratios to solve problems.<br>▪ Know the exact values of the sine, cosine and tangent of some angles.<br>**SPRING TERM 2: NUMBER 2**<br>**PROBABILITY:**<br>▪ Calculate simple probabilities from equally likely events.<br>▪ Understand mutually exclusive and exhaustive outcomes.<br>▪ Use two-way tables to record the outcomes from two events.<br>▪ Work out probabilities from sample space diagrams.<br>▪ Find and interpret probabilities based on experimental data.<br>▪ Make predictions from experimental data.<br>▪ Use Venn diagrams to work out probabilities.<br>▪ Understand the language of sets and Venn diagrams.<br>▪ Use frequency trees and tree diagrams.<br>▪ Work out probabilities using tree diagrams.<br>▪ Understand independent events.<br>▪ Understand when events are not independent. |

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| | | ▪ Solve probability problems involving events that are not independent<br>**MULTIPLICATIVE REASONING:**<br>▪ Calculate a percentage profit or loss.<br>▪ Express a given number as a percentage of another in more complex situations.<br>▪ Find the original amount given the final amount after a percentage increase or decrease<br>▪ Find an amount after repeated percentage change.<br>▪ Solve growth and decay problems.<br>▪ Solve problems involving compound measures.<br>▪ Convert between metric speed measures.<br>▪ Calculate average speed, distance and time.<br>▪ Use formulae to calculate speed and acceleration.<br>▪ Use ratio and proportion in measures and conversions.<br>▪ Use inverse proportions. |
| | **SUMMER TERM** | **MULTIPLICATIVE REASONING:**<br>▪ Calculate a percentage profit or loss.<br>▪ Express a given number as a percentage of another in more complex situations.<br>▪ Find the original amount given the final amount after a percentage increase or decrease<br>▪ Find an amount after repeated percentage change.<br>▪ Solve growth and decay problems.<br>▪ Solve problems involving compound measures.<br>▪ Convert between metric speed measures.<br>▪ Calculate average speed, distance and time.<br>▪ Use formulae to calculate speed and acceleration.<br>▪ Use ratio and proportion in measures and conversions.<br>▪ Use inverse proportions.<br>**CONSTRUCTION, LOCI & BEARINGS:**<br>▪ Recognise 3D shapes and their properties.<br>▪ Describe 3D shapes using the correct mathematical words.<br>▪ Understand the 2D shapes that make up 3D objects.<br>▪ Identify and sketch planes of symmetry of 3D shapes.<br>▪ Understand and draw plans and elevations of 3D shapes.<br>▪ Sketch 3D shapes based on their plans and elevations.<br>▪ Make accurate drawings of triangles using a ruler, protractor and compasses.<br>▪ Identify SSS, ASA, SAS and RHS triangles as unique from a given description.<br>▪ Identify congruent triangles<br>▪ Draw diagrams to scale.<br>▪ Correctly interpret scales in real-life contexts.<br>▪ Use scales on maps and diagrams to work out lengths and distances.<br>▪ Know when to use exact measurements and estimations on scale drawings and maps.<br>▪ Draw lengths and distances correctly on given scale drawings.<br>▪ Accurately draw angles and 2D shapes using a ruler, protractor and compasses.<br>▪ Construct a polygon inside a circle.<br>▪ Recognise nets and make accurate drawings of nets of common 3D objects<br>▪ Draw accurately using rulers and compasses.<br>▪ Bisect angles and lines using rulers and compasses.<br>▪ Draw loci for the path of points that follow a given rule.<br>▪ Identify regions bounded by loci to solve practical problems.<br>▪ Find and use three-figure bearings.<br>▪ Use angles at parallel lines to work out bearings.<br>▪ Solve problems involving bearings and scale diagrams. |

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| YEAR 11 HIGHER GCSE | AUTUMN TERM | **AUTUMN TERM 1: NUMBER 1**<br>**FURTHER STATISTICS:**<br>▪ Understand how to take a simple random sample.<br>▪ Understand how to take a stratified sample.<br>▪ Draw and interpret cumulative frequency tables and diagrams.<br>▪ Work out the median, quartiles and interquartile range from a cumulative frequency diagram.<br>▪ Find the quartiles and the interquartile range from stem-and-leaf diagrams.<br>▪ Draw and interpret box plots.<br>▪ Understand frequency density.<br>▪ Draw histograms.<br>▪ Interpret histograms.<br>▪ Compare two sets of data.<br>**EQUATIONS & GRAPHS:**<br>▪ Solve simultaneous equations graphically.<br>▪ Represent inequalities on graphs.<br>▪ Interpret graphs of inequalities.<br>▪ Recognise and draw quadratic functions.<br>▪ Find approximate solutions to quadratic equations graphically.<br>▪ Solve quadratic equations using an iterative process.<br>▪ Find the roots of cubic equations.<br>▪ Sketch graphs of cubic functions.<br>▪ Solve cubic equations using an iterative process.<br>**AUTUMN TERM 2: NUMBER 2**<br>**CIRCLE THEOREMS:**<br>▪ Solve problems involving angles, triangles and circles.<br>▪ Understand and use facts about chords and their distance from the centre of a circle.<br>▪ Solve problems involving chords and radii.<br>▪ Understand and use facts about tangents at a point and from a point.<br>▪ Give reasons for angle and length calculations involving tangents.<br>▪ Understand, prove and use facts about angles subtended at the centre and the circumference of circles.<br>▪ Understand, prove and use facts about the angle in a semicircle being a right angle.<br>▪ Find missing angles using these theorems and give reasons for answers.<br>▪ Understand, prove and use facts about angles subtended at the circumference of a circle.<br>▪ Understand, prove and use facts about cyclic quadrilaterals.<br>▪ Prove the alternate segment theorem.<br>▪ Solve angle problems using circle theorems.<br>▪ Give reasons for angle sizes using mathematical language.<br>▪ Find the equation of the tangent to a circle at a given point.<br>**MORE ALGEBRA:**<br>▪ Change the subject of a formula where the power of the subject appears.<br>▪ Change the subject of a formula where the subject appears twice.<br>▪ Add and subtract algebraic fractions.<br>▪ Multiply and divide algebraic fractions.<br>▪ Change the subject of a formula involving fractions where all the variables are in the denominators.<br>▪ Simplify expressions involving surds.<br>▪ Expand expressions involving surds.<br>▪ Rationalise the denominator of a fraction.<br>▪ Solve equations that involve algebraic fractions.<br>▪ Use function notation.<br>▪ Find composite functions.<br>▪ Find inverse functions.<br>▪ Prove a result using algebra. |

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| | SRPING TERM | **SPRING TERM 1: NUMBER 1**<br>**VECTORS & GEOMETRIC PROOFS:**<br>▪ Understand and use vector notation.<br>▪ Work out the magnitude of a vector. Calculate using vectors and represent the solutions graphically.<br>▪ Calculate the resultant of two vectors.<br>▪ Solve problems using vectors.<br>▪ Use the resultant of two vectors to solve vector problems.<br>▪ Express points as position vectors.<br>▪ Prove lines are parallel.<br>▪ Prove points are collinear.<br>▪ Solve geometric problems in two dimensions using vector methods.<br>▪ Apply vector methods for simple geometric proofs.<br>**PROPORTION & GRAPHS:**<br>▪ Write and use equations to solve problems involving direct proportion.<br>▪ Write and use equations to solve problems involving direct proportion.<br>▪ Solve problems involving square and cubic proportionality.<br>▪ Write and use equations to solve problems involving inverse proportion.<br>▪ Use and recognise graphs showing inverse proportion.<br>▪ Recognise graphs of exponential functions.<br>▪ Sketch graphs of exponential functions.<br>▪ Calculate the gradient of a tangent at a point.<br>▪ Estimate the area under a non-linear graph.<br>▪ Understand the relationship between translating a graph and the change in its function notation.<br>▪ Understand the effect stretching a curve parallel to one of the axes has on its function form.<br>▪ Understand the effect reflecting a curve in one of the axes has on its function form.<br>**SPRING TERM 2: NUMBER 2**<br>▪ Teaching will be based on the individual needs of the class as shown in the data from the teachers analysis excel file. |
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| YEAR 11 FOUNDATION GCSE | AUTUMN TERM | **AUTUMN TERM 1: NUMBER 1**<br>**Constructions, loci and bearings**<br>▪ Recognise 3D shapes and their properties.<br>▪ Describe 3D shapes using the correct mathematical words.<br>▪ Understand the 2D shapes that make up 3D objects.<br>▪ Identify and sketch planes of symmetry of 3D shapes.<br>▪ Understand and draw plans and elevations of 3D shapes.<br>▪ Sketch 3D shapes based on their plans and elevations.<br>▪ Make accurate drawings of triangles using a ruler, protractor and compasses.<br>▪ Identify SSS, ASA, SAS and RHS triangles as unique from a given description.<br>▪ Identify congruent triangles<br>▪ Draw diagrams to scale.<br>▪ Correctly interpret scales in real-life contexts.<br>▪ Use scales on maps and diagrams to work out lengths and distances.<br>▪ Know when to use exact measurements and estimations on scale drawings and maps.<br>▪ Draw lengths and distances correctly on given scale drawings.<br>▪ Accurately draw angles and 2D shapes using a ruler, protractor and compasses.<br>▪ Construct a polygon inside a circle.<br>▪ Recognise nets and make accurate drawings of nets of common 3D objects<br>▪ Draw accurately using rulers and compasses.<br>▪ Bisect angles and lines using rulers and compasses.<br>▪ Draw loci for the path of points that follow a given rule.<br>▪ Identify regions bounded by loci to solve practical problems.<br>▪ Find and use three-figure bearings.<br>▪ Use angles at parallel lines to work out bearings.<br>▪ Solve problems involving bearings and scale diagrams.<br>▪ Quadratic equations and graphs<br>▪ Multiply double brackets.<br>▪ Recognise quadratic expressions.<br>▪ Square single brackets.<br>▪ Plot graphs of quadratic functions.<br>▪ Recognise a quadratic function.<br>▪ Use quadratic graphs to solve problems.<br>▪ Solve quadratic equations ax2 + bx + c = 0 using a graph.<br>▪ Solve quadratic equations ax2 + bx + c = k using a graph.<br>▪ Factorise quadratic expressions<br>▪ Solve quadratic functions algebraically.<br>**AUTUMN TERM 2: NUMBER 2**<br>**Perimeter, area and volume 2**<br>▪ Calculate the circumference of a circle.<br>▪ Solve problems involving the circumference of a circle.<br>▪ Calculate the circumference and radius of a circle.<br>▪ Work out percentage error intervals.<br>▪ Work out the area of a circle.<br>▪ Work out the radius or diameter of a circle.<br>▪ Solve problems involving the area of a circle.<br>▪ Give answers in terms of π.<br>▪ Understand and use maths language for circles and perimeters.<br>▪ Work out areas of semicircles and quarter circle and perimeters.<br>▪ Solve problems involving sectors of circles.<br>▪ Solve problems involving areas and perimeters of 2D shapes.<br>▪ Work out the volume and surface area of cylinders.<br>▪ Work out the volume of a pyramid.<br>▪ Work out the surface area of a pyramid.<br>▪ Work out the volume of a cone.<br>▪ Work out the surface area of a cone.<br>▪ Work out the volume of a sphere. |

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| | | ▪ Work out the surface area of a sphere.<br>▪ Work out the volume and surface area of composite solids.<br>▪ **Fractions, indices and standard form**<br>▪ Multiply and divide mixed numbers and fractions.<br>▪ To know and use the laws of indices<br>▪ Write large numbers in standard form.<br>▪ Convert large numbers from standard form into ordinary numbers.<br>Write small numbers in standard form.<br>▪ Convert numbers from standard form with negative powers of ordinary numbers.<br>▪ To multiply and divide numbers in standard form.<br>▪ To add and subtract numbers in standard form. |
| | **SRPING TERM** | **SPRING TERM 1: NUMBER 1**<br>**Congruence, similarity and vectors**<br>▪ Understand similarity.<br>▪ Use similarity to solve angle problems.<br>▪ Find the scale factor of an enlargement.<br>▪ Use similarity to solve problems.<br>▪ Understand the similarity of regular polygons.<br>▪ Calculate perimeters of similar shapes.<br>▪ Recognise congruent triangles.<br>▪ Use congruence to work out unknown angles<br>▪ Use congruence to work out unknown sides.<br>▪ Add and subtract vectors.<br>▪ Find the resultant of two vectors.<br>▪ Subtract vectors.<br>▪ Find multiples of a vector.<br>▪ More algebra<br>▪ Draw and interpret graphs of cubic functions.<br>▪ Draw and interpret graphs of y = 1/x.<br>▪ Draw and interpret non-linear graphs to solve problems.<br>▪ Solve simultaneous equations by drawing a graph.<br>▪ Write and solve simultaneous equations.<br>▪ Solve simultaneous equations algebraically<br>▪ Change the subject of a formula.<br>▪ Identify expressions, equations, formulae and identities.<br>▪ Prove results using algebra. |
| | **SUMMER TERM** | |