

Autumn			
Ratio & Proportion 1	R1a. Ratio and scale	<ul style="list-style-type: none"> <li>Understand ratio and its link to multiplication</li> <li>Use ratio notation</li> <li>Reduce ratios to simplest form</li> <li>Solve ratio problems</li> </ul>	<b>Key Vocabulary</b> Equivalent    Of equal value for all values of a variable. Factor        An integer that divides into a number without leaving a remainder, or integers that multiply to make a specific number. Ratio         A multiplicative relationship describing how two numbers or variables compare. Scale         The comparison of something drawn to its actual size. Conversion    The process of changing one variable to another Equal Parts    All parts in the same proportion, or a whole shared equally. Order         To place a set of numbers in a determined sequence. Part          A section of a whole. Proportion    A numerical relationship that compares the size of a part to the size of a whole.
	R1b. Multiplicative change	<ul style="list-style-type: none"> <li>Use scale factors, linking to ratio, to solve simple direct proportion problems</li> <li>Convert between currencies, including using graphs</li> <li>Draw and interpret scale diagrams and maps</li> </ul>	<b>Key Vocabulary</b> Scale         The comparison of something drawn to its actual size. Scale Factor    A multiplier describing a change in size (SF more than 1 = increased size, SF less than 1 = decreased size). Variable       A letter that represents an unknown number or a changeable quantity. Approximation An estimate for a value. Axes          Horizontal and vertical number lines that meet at a right-angle. Conversion    The process of changing one variable to another Convert        To change from one form or unit into another. Currency      A system of money used in a particular country. Dimension    A particular measurement used to describe an object (length, width, height, etc.). Proportion    A numerical relationship that compares the size of a part to the size of a whole.
Number 6	N6. Multiplicative operations with fractions	<ul style="list-style-type: none"> <li>Multiply and divide a fraction by an integer</li> <li>Multiply and divide a fraction by a fraction</li> <li>Understand and use the reciprocal</li> </ul>	<b>Key Vocabulary</b> Denominator    The number below the fraction bar. The number represents the total number of parts. Dividend        The number being divided. Divisor         The number to divide by. Non-Unit Fraction A fraction in which numerator is bigger than one. Numerator      The number above the fraction bar - it represents how many parts are taken. Commutative    The order of values within an operation does not affect the result. Quotient        The result of a division Unit Fraction    A fraction in which the numerator is one and the denominator is a positive integer. Whole          The full amount - a value without any decimal or fractional parts. Division        The process of sharing equally.



<b>Algebra 2</b>	<b>A2. Working in the Cartesian plane</b>	<ul style="list-style-type: none"> <li>Plot and interpret straight line graphs</li> <li>Understand and use the equations of a straight line, including lines parallel to the axes</li> <li>Make links between direct proportion and straight lines of the form <math>y=kx</math>. Model situations by translating them into expressions, formulae and graphs</li> </ul>	<p><b>Key Vocabulary</b></p> <p>Gradient            The steepness of a line.          Intercept            The point where two lines cross.          Origin                (0,0) on a graph -the point where the two axes intersect.          Parallel gradient).    Two straight lines that never intersect that are always the same distance apart (the same gradient).          Plot                    To use exact coordinates to produce a graph.          Quadrant             One quarter of the coordinate plane.          Y-intercept           The point at which the line crosses the y-axis.          Co-ordinate          A set of values that show an exact position on a graph - looks like (x,y).          Horizontal            A straight line from left to right (parallel to the x axis).          Vertical                A straight line from top to bottom (parallel to the y axis).</p>
<b>Spring</b>			
<b>Probability &amp; Statistics 2</b>	<b>P2a. Representing data</b>	<ul style="list-style-type: none"> <li>Draw and interpret scatter graphs</li> <li>Understand correlation</li> <li>Draw and use lines of best fit</li> <li>Understand grouped and ungrouped, discrete and continuous data</li> <li>Design and use one and two-way tables</li> </ul>	<p><b>Key Vocabulary</b></p> <p>Line of best fit        A straight line drawn to represent the pattern of the data on a scatter graph.          Origin                 (0,0) on a graph - the point where the two axes intersect.          Relationship           The link between two variables (e.g. between sunny days and ice cream sales).          Two-way table        A frequency table for organising bivariate data.          Variable                A letter than represents an unknown number or a changeable quantity.          Continuous Data     Quantitative (numerical) data that has an infinite number of values within its range (often seen with height, distance, time).          Correlation            The type of relationship between two variables.          Discrete Data         Quantitative or qualitative data that only takes certain values.          Frequency             The number of times a particular data value occurs.          Outlier                 A value that stands apart from the data set.          Qualitative            Descriptive data: colours, genders, names, emotions etc.          Quantitative          Numerical data.</p>
	<b>P2b. Probability 2</b>	<ul style="list-style-type: none"> <li>List outcomes using sample space diagrams for one and two events</li> <li>Find probabilities using tables and Venn diagrams</li> </ul>	<p><b>Key Vocabulary</b></p> <p>Fair                      There is zero bias, and all outcomes have an equal likelihood.          Probability            The likelihood of an event happening.          Bias                     A built-in error that makes all values wrong (unequal) by a certain amount, e.g. a weighted dice.          Element                An item in a set          Intersection            The overlapping part of a Venn diagram (AND <math>\cap</math>).          Mutually Exclusive    Events that cannot occur at the same time          Random                 Something happens by chance and is unable to be predicted.          Set                        A collection of numbers, shapes or objects.          Union                    Two ellipses that join (OR <math>\cup</math>).</p>



Algebra 3	A3a. Mathematical relationships 1	<ul style="list-style-type: none"> <li>Form and use expressions, formulae and identities</li> <li>Expand and factorise into single brackets</li> <li>Form and solve equations with and without brackets</li> <li>Solve inequalities without brackets</li> </ul>	<p><b>Key Vocabulary</b></p> <p>Coefficient      A number that multiplies a variable or bracket.</p> <p>Equivalent      Of equal value for all values of a variable.</p> <p>HCF              Highest common factor - the biggest factor that two or more numbers/terms share.</p> <p>Inequality      A mathematical relationship that compares two expressions showing if one is greater than, less than or equal to another.</p> <p>Product         The result of a multiplication.</p> <p>Simplify         Grouping and combining terms to rewrite an expression more efficiently.</p> <p>Substitute      Replace a variable with a numerical value.</p>
<b>Summer</b>			
Algebra 3	A3b. Sequences 2	<ul style="list-style-type: none"> <li>Generate sequences using more complex rules, e.g. with brackets and squared terms, both in words and algebraically</li> </ul>	<p><b>Key Vocabulary</b></p> <p>Arithmetic      A type of sequence in which the difference between the terms is constant (synonym for linear).</p> <p>Difference      The result of a subtraction.</p> <p>Geometric      A type of sequence in which each term is found by multiplying the previous term by a fixed non zero number.</p> <p>Linear sequence      A sequence with a constant difference (amount added or subtracted each time).</p> <p>Non-linear      The difference between terms is not constant (it may be <math>\times</math>, <math>\div</math> or some other rule).</p> <p>Sequence        An ordered set of numbers, shapes or objects, arranged according to a rule.</p> <p>Term (Sequence)      A number, shape or object in a sequence.</p> <p>Position         The place something is located.</p>
	A3c. Indices	<ul style="list-style-type: none"> <li>Form expressions using indices</li> <li>Understand and use the addition and subtraction rules</li> </ul>	<p><b>Key Vocabulary</b></p> <p>Base             The number being repeatedly multiplied.</p> <p>Coefficient      A number that multiplies a variable or bracket.</p> <p>Exponent        The number of repeats in the multiplication (synonym of index/indices).</p> <p>Index            The number of repeats in the multiplication (synonym of exponent).</p> <p>Power            A base with an exponent/index. Sometimes used as a synonym for exponent/index.</p> <p>Product         The result of a multiplication.</p> <p>Simplify         Grouping and combining terms to rewrite an expression more efficiently.</p>
Number 7	N7a. Fractions and percentages	<ul style="list-style-type: none"> <li>Develop understanding of fractions, decimals and percentages</li> <li>Evaluate percentage increases and decreases</li> <li>Use multipliers to solve percentage problems</li> <li>Express one number as a percentage of another</li> </ul>	<p><b>Key Vocabulary</b></p> <p>Equivalent      Of equal value for all values of a variable.</p> <p>Decimal         A base ten number with a decimal point used to separate ones, tenths, hundredths etc.</p> <p>Fraction         A type of number that represents how many parts of a whole we have. A fraction represents a division.</p> <p>Depreciation    The reduction in value of an item.</p> <p>Growth          The process of increasing/growing.</p> <p>Integer         A whole number that is positive, negative or zero.</p> <p>Invest            Use money with the goal of it increasing in value over time (usually in a bank).</p> <p>Loss             Money lost after expenditure and taxes.</p> <p>Percent         Parts per 100 – written using the % symbol.</p> <p>Reduce          To make smaller in value.</p>



	N7b. Standard Index Form 1	<ul style="list-style-type: none"> <li>Convert between numbers in ordinary and standard form</li> <li>Compare numbers given in standard form</li> <li>Complete additive calculations with numbers given in standard form, with and without a calculator</li> </ul>	<b>Key Vocabulary</b> Base The number being repeatedly multiplied. Exponent The number of repeats in the multiplication (synonym of index/indices). Index The number of repeats in the multiplication (synonym of exponent). Leading digit The left-most non-zero digit in a number. Commutative The order of values within an operation does not affect the result. Power A base with an exponent/index. Sometimes used as a synonym for exponent/index. Standard (Index) Form A system of writing very big or very small numbers. Negative A value less than zero (written with a minus sign).
	N7c. Approximations	<ul style="list-style-type: none"> <li>Estimation, including rounding to a given number of decimal places</li> <li>Writing error intervals</li> </ul>	<b>Key Vocabulary</b> Overestimate Rounding up – a solution greater than the actual value. Underestimate Rounding down – a solution less than the actual value. Decimal A base ten number with a decimal point used to separate ones, tenths, hundredths etc. Round A method of approximating to the closest bound (numbers exactly halfway are rounded up). Significant Place value of greatest importance.
Geometry 2	G2a. Angles 1	<ul style="list-style-type: none"> <li>Understand and use parallel lines and angles</li> <li>Work out angles in special quadrilaterals (parallelogram/rhombus)</li> <li>Find and use the sum of interior and exterior angles of a polygon</li> <li>Prove simple geometric facts</li> </ul>	<b>Key Vocabulary</b> Isosceles Two equal length sides and equal sized angles (in a triangle or trapezium). Parallel Two straight lines that never intersect that are always the same distance apart (the same gradient). Polygon A 2D closed shape made with straight lines. Regular A shape that has angles of equal size and sides of equal lengths. Sum The result of an addition (the total). Transversal A straight line that intersects two or more other (normally parallel) lines Angle The figure formed by two straight lines meeting (measured in degrees)
	G2b. Area of trapezia and circles	<ul style="list-style-type: none"> <li>Calculate the area of a trapezium</li> <li>Calculate the area of compound shapes</li> <li>Use significant figures</li> <li>Calculate the area of a circle, and the area of parts of a circle</li> <li>Calculate the circumference of a circle</li> </ul>	<b>Key Vocabulary</b> Area The space inside a 2D shape. Compound shape A shape that is made up of two or more geometric shapes. Congruent The same shape and size Formula A mathematical relationship given in symbols that represent something specific. E.g. $b \times h =$ area of rectangle. Perpendicular Two straight lines that intersect at a right angle (at $90^\circ$ ). Pi ( $\pi$ ) An irrational number that describes ratio of a circle's circumference to its diameter. Sector A part of the circle enclosed by two radii and an arc. Perimeter The distance around the edge of a 2D object. Infinity ( $\infty$ ) A number without a given ending (too great to count to the end of the number).
	G2c. Symmetry & reflection	<ul style="list-style-type: none"> <li>Recognise line symmetry in polygons and other shapes</li> <li>Reflect shapes in horizontal, vertical and diagonal lines</li> </ul>	<b>Key Vocabulary</b> Line of symmetry (mirror line) A line that passes through the centre of a shape with a mirror image on either side of the line. Perpendicular Two straight lines that intersect at a right angle (at $90^\circ$ ). Vertex A point where two or more line segments meet ( a corner). Horizontal A straight line from left to right (parallel to the x axis). Reflect Transform by mapping an object from one position to another of equal distance from a given line. Vertical A straight line from top to bottom (parallel to the y axis).

