



Topic	Learning Objectives	Key Vocabulary	Learning Sequence	Linked Learning	Home Learning
Number	<p>Order positive and negative integers, decimals and fractions</p> <p>Use inequality and equality symbols correctly</p> <p>Recognise and use relationships between operations including inverses</p> <p>Calculate with roots and integer indices</p> <p>Calculate with compound measures</p> <p>Round numbers to use in estimation calculations</p>	<p>Integer</p> <p>Digit</p> <p>Remainder</p> <p>Operation</p> <p>Inverse</p> <p>Multiple</p> <p>Prime</p> <p>Square</p> <p>Cube</p>	<p>Order positive and negative integers, decimals and fractions</p> <p>Use inequality and equality symbols correctly</p> <p>Recognise and use relationships between operations including inverses</p> <p>Calculate with roots and integer indices</p> <p>Calculate with compound measures</p> <p>Round numbers to use in estimation calculations</p>	<p>Appreciation of place value and recognise even and odd numbers</p> <p>Knowledge of using four operations with whole numbers</p> <p>Knowledge of complements to 10 and to 100</p> <p>Knowledge of strategies for multiplying and dividing whole numbers by 2,4,5 and 10</p> <p>Read and write decimals in figures and words</p>	<p>There will be a written piece of homework each week to asses learning.</p> <p>Videos and additional work can be accessed via www.corbettmaths.com</p> <p>www.keshmaths.org.uk</p>
Algebra	<p>Use and interpret algebraic notation</p> <p>Substitute numerical values into formulae and expressions</p> <p>Simplify and manipulate algebraic expressions</p> <p>Know the difference between equation and identity</p> <p>Argue mathematically</p>	<p>Expression</p> <p>Identity</p> <p>Equation</p> <p>Formula</p> <p>Term</p> <p>Index</p> <p>Power</p> <p>factorise</p>	<p>Use and interpret algebraic notation</p> <p>Substitute numerical values into formulae and expressions</p> <p>Simplify and manipulate algebraic expressions</p> <p>Know the difference between equation and identity</p> <p>Argue mathematically</p>	<p>Ability to use negative numbers with the four operations and recall and use hierarchy of operations and understand inverse operations</p> <p>Deal with decimals and negative on a calculator</p> <p>Use index laws numerically</p>	<p>There will be a written piece of homework each week to asses learning.</p> <p>Videos and additional work can be accessed via www.corbettmaths.com</p> <p>www.keshmaths.org.uk</p>



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<p>Graphs tables and charts</p>	<p>Complete standard constructions using a ruler, compass and protractor</p> <p>Use standard units of measure</p> <p>Interpret and construct tables, charts and diagrams</p> <p>Interpret, analyse and compare distributions of data sets</p> <p>Apply statistics to describe a population</p> <p>Use and interpret scatter graphs of bivariate data.</p>	<p>Continuous</p> <p>Qualitative</p> <p>Quantitative</p> <p>Correlation</p> <p>Line of best fit</p> <p>Sample</p> <p>Population</p> <p>Stem and leaf</p> <p>Frequency</p> <p>Sort estimate</p>	<p>Design and use data collection sheets including the use of inequalities</p> <p>Use correct notation for time and work out time taken for a journey from a table</p> <p>Construct tables for time series data</p> <p>Design and use two-way tables for discrete and grouped data</p> <p>Calculate the total frequency from a frequency table</p> <p>Identify mode / modal class from a frequency table</p> <p>Construct stem and leaf diagrams</p> <p>Construct, interpret and draw pie charts</p> <p>Construct, interpret and draw stem and leaf diagrams.</p>	<p>Read scales on graphs, draw circles, measure angles and plot coordinates in all four quadrants</p> <p>Know simple angle rules</p> <p>Be fluent with tally charts</p> <p>Use inequality notation</p> <p>Find the midpoint of two numbers</p> <p>Use the correct notation for time using 12 and 24hr clocks</p>	<p>There will be a written piece of homework each week to assess learning.</p> <p>Videos and additional work can be accessed via www.corbettmaths.com</p> <p>www.keshmaths.org.uk</p>



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Fractions, Decimals and Percentages	<p>Order positive and negative integers, decimals and fractions</p> <p>Apply the four operations to integers, decimals and simple fractions and mixed numbers</p> <p>Calculate exactly with fractions</p> <p>Work interchangeably with terminating decimals and their corresponding fractions</p> <p>Interpret fractions and percentages as operators</p> <p>Use standard units of mass length, time and money</p> <p>Express one quantity as a fraction of another</p> <p>Define percentage as number of parts per hundred</p> <p>Solve problems involving percentage change, increase / decrease and simple interest including in financial mathematics</p>	<p>Inverse</p> <p>Mixed</p> <p>Improper</p> <p>Recurring</p> <p>Integer</p> <p>Terminating</p> <p>Percentage</p> <p>VAT</p> <p>Increase</p> <p>Decrease</p> <p>Multiplier</p> <p>Profit</p> <p>Loss</p>	<p>Order positive and negative integers, decimals and fractions</p> <p>Apply the four operations to integers, decimals and simple fractions and mixed numbers</p> <p>Calculate exactly with fractions</p> <p>Work interchangeably with terminating decimals and their corresponding fractions</p> <p>Interpret fractions and percentages as operators</p> <p>Use standard units of mass length, time and money</p> <p>Express one quantity as a fraction of another</p> <p>Define percentage as number of parts per hundred</p> <p>Solve problems involving percentage change, increase / decrease and simple interest including in financial mathematics</p>	<p>Be able to use the four operations of number</p> <p>Be able to find common factors</p> <p>Have a basic understanding of fractions as being parts of a whole</p> <p>Be able to define percentages as number of parts per hundred</p> <p>Know number complements to 10 and multiplication tables</p>	<p>There will be a written piece of homework each week to assess learning.</p> <p>Videos and additional work can be accessed via www.corbettmaths.com</p> <p>www.keshmaths.org.uk</p>



Topic	Learning Objectives	Key Vocabulary	Learning Sequence	Linked Learning	Home Learning
<p>Equations, Inequalities and Sequences</p>	<p>Apply and interpret limits of accuracy</p> <p>Substitute numerical values into formulae and expressions</p> <p>Understand and use the concepts and vocabulary of expressions, equations, formulae, identities, inequalities, terms and factors</p> <p>Understand and use standard mathematical formulae, rearranging formulae to change the subject</p> <p>Solve linear equations in one unknown algebraically, find approximate solutions on a graph</p> <p>Translate simple situations or procedures into algebraic expressions or formulae</p> <p>Solve linear inequalities in one variable, represent the solution set on a number line</p> <p>Generate terms of a sequence from either a term-to-term or a position-to-term rule</p> <p>Recognise and use sequences of triangular, square and cube number, simple arithmetic progressions, Fibonacci type sequences and simple geometric progressions</p> <p>Deduce expressions to calculate the nth term of linear sequences</p>	<p>Arithmetic</p> <p>Geometric</p> <p>Function</p> <p>Sequence</p> <p>Nth term</p> <p>Derive</p> <p>Quadratic</p> <p>Inequality</p> <p>Represent</p> <p>Substitute</p> <p>Expand</p> <p>Linear</p>	<p>Apply and interpret limits of accuracy</p> <p>Substitute numerical values into formulae and expressions</p> <p>Understand and use the concepts and vocabulary of expressions, equations, formulae, identities, inequalities, terms and factors</p> <p>Understand and use standard mathematical formulae, rearranging formulae to change the subject</p> <p>Solve linear equations in one unknown algebraically, find approximate solutions on a graph</p> <p>Translate simple situations or procedures into algebraic expressions or formulae</p> <p>Solve linear inequalities in one variable, represent the solution set on a number line</p> <p>Generate terms of a sequence from either a term-to-term or a position-to-term rule</p> <p>Recognise and use sequences of triangular, square and cube number, simple arithmetic progressions, Fibonacci type sequences and simple geometric progressions</p> <p>Deduce expressions to calculate the nth term of linear sequences</p>	<p>Be able to use inequality signs between number</p> <p>Be able to use negative numbers with the four operations, recall and use the hierarchy of operations and understand inverse operations</p> <p>Deal with decimals and negatives on a calculator</p> <p>Use index laws numerically</p> <p>Be able to draw a number line</p>	<p>There will be a written piece of homework each week to assess learning.</p> <p>Videos and additional work can be accessed via www.corbettmaths.com</p> <p>www.keshmaths.org.uk</p>



Topic	Learning Objectives	Key Vocabulary	Learning Sequence	Linked Learning	Home Learning
<p>Unit 4a— Fractions, Decimals and Percentages (Continued)</p>			<p>Recall the fraction-to-decimal conversion and convert fractions to decimals;</p> <p>Convert a fraction to a decimal to make a calculation easier, e.g. $0.25 \times 8 = \frac{2}{8}$, or $\frac{1}{2} \times 10 = 0.375 \times 10$;</p> <p>Recognise recurring decimals and convert fractions such as $\frac{1}{3}$ and $\frac{2}{3}$ into recurring decimals;</p> <p>Understand that a percentage is a fraction in hundredths;</p> <p>Express a given number as a percentage of another number;</p> <p>Convert between fractions, decimals and percentages;</p> <p>Order fractions, decimals and percentages, including use of inequality signs</p>		<p>There will be a written piece of homework each week to reinforce key concepts.</p>
<p>Unit 4b— Percentages</p>	<p>To be able to express a number as a percentage of another number</p> <p>To be able to calculate Simple Interest</p> <p>To be able to find a percentage of a quantity using a multiplier</p>	<p>Percentage change</p> <p>Original amount</p> <p>Multiplier</p> <p>(Simple) interest</p>	<p>Express a given number as a percentage of another number;</p> <p>Calculate amount of increase/decrease;</p>	<p>Find a percentage of a quantity without a calculator: 50%, 25% and multiples of 10% and 5%;</p> <p>Find a percentage of a quantity or measurement (use measurements they should know from Key Stage 3 only);</p>	<p>There will be a written piece of homework each week to reinforce key concepts.</p>



Topic	Learning Objectives	Key Vocabulary	Learning Sequence	Linked Learning	Home Learning
<p>Unit 4b— Percentages (Continued)</p>	<p>To be able to increase/decrease by a percentage</p> <p>To be able to calculate percentage profit/loss</p> <p>To be able to use repeated percentage change</p> <p>To be able to calculate reverse percentage</p> <p>To be able to calculate using compound interest</p>	<p>Percentage change</p> <p>Original amount</p> <p>Multiplier</p> <p>(Simple) interest</p>	<p>Calculate amount of increase/decrease;</p> <p>Use percentages to solve problems, including comparisons of two quantities using percentages;</p> <p>Use percentages in real-life situations, including percentages greater than 100%:</p> <p>Value of profit or loss;</p> <p>Simple interest;</p> <p>Find a percentage of a quantity, including using a multiplier;</p> <p>Use a multiplier to increase or decrease by a percentage in any scenario where percentages are used;</p> <p>Understand the multiplicative nature of percentages as operators.</p> <p>Express a given number as a percentage of another number in more complex situations;</p> <p>Calculate percentage profit or loss;</p> <p>Make calculations involving repeated percentage change, not using the formula;</p> <p>Find the original amount given the final amount after a percentage increase or decrease;</p>	<p>Find a percentage of a quantity without a calculator: 50%, 25% and multiples of 10% and 5%;</p> <p>Find a percentage of a quantity or measurement (use measurements they should know from Key Stage 3 only);</p>	<p>There will be a written piece of homework each week to reinforce key concepts.</p>



Topic	Learning Objectives	Key Vocabulary	Learning Sequence	Linked Learning	Home Learning
Unit 5a— Equations and Inequalities	<p>To be able to set up and solve expressions and equations from a word problem</p> <p>To be able to rearrange equations</p> <p>To be able to substitute into a formula</p> <p>To be able to solve algebraic problem involving area, perimeter and angles</p> <p>To be able to represent inequalities on a number line</p> <p>To be able to solve inequalities</p>	<p>Solve</p> <p>Expression</p> <p>Equation</p> <p>Inequality</p> <p>Integer</p> <p>Notation</p> <p>The inequality symbols: < (less than), > (greater than), \leq (less than or equal to), \geq (more than or equal to)</p> <p>The number line to represent solutions to inequalities. An open circle represents a boundary that is not included. A filled circle represents a boundary that is included.</p>	<p>Solve simple equations including those:</p> <p>with integer coefficients, in which the unknown appears on either side or on both sides of the equation;</p> <p>which contain brackets, including those that have negative signs occurring anywhere in the equation, and those with a negative solution;</p> <p>with one unknown, with integer or fractional coefficients;</p> <p>Rearrange simple equations;</p> <p>Substitute into a formula, and solve the resulting equation;</p> <p>Find an approximate solution to a linear equation using a graph;</p> <p>Solve angle or perimeter problems using algebra.</p> <p>Show inequalities on number lines and write down integer values that satisfy an inequality</p> <p>Solve an inequality such as $-3 < 2x + 1 < 7$ and show the solution set on a number line;</p> <p>Solve two inequalities in x, find the solution sets and compare them to see which value of x satisfies both;</p>	<p>Select an expression/equation/formula/identity from a list;</p> <p>Use function machines;</p> <p>Substitute positive and negative numbers into expressions</p> <p>Key angle facts</p> <p>Knowledge of area and perimeter</p> <p>Understand the number line</p> <p>Understand the meaning of the four inequality symbols</p>	<p>There will be a written piece of homework each week to reinforce key concepts.</p>



Topic	Learning Objectives	Key Vocabulary	Learning Sequence	Linked Learning	Home Learning
<p>Unit 5a— Equations and Inequalities (continued)</p>	<p>To be able to set up and solve expressions and equations from a word problem</p> <p>To be able to rearrange equations</p> <p>To be able to substitute into a formula</p> <p>To be able to solve algebraic problem involving area, perimeter and angles</p> <p>To be able to represent inequalities on a number line</p> <p>To be able to solve inequalities</p>		<p>Write expressions and set up simple equations forming an equation from a word problem</p> <p>Use the correct notation to show inclusive and exclusive inequalities;</p> <p>Construct inequalities to represent a set shown on a number line;</p> <p>Solve simple linear inequalities in one variable, and represent the solution set on a number line</p>		<p>There will be a written piece of homework each week to reinforce key concepts.</p>



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<p>Unit 5b— Sequences</p>	<p>To be able to recognise and use Fibonacci type sequences</p> <p>To be able to find the nth term of a linear sequence</p> <p>To generate terms in a quadratic sequence</p>	<p>Term</p> <p>Term-to-term rule</p> <p>Position-to-term rule</p> <p>nth term</p> <p>Generate</p> <p>Linear</p> <p>First (second) difference</p> <p>Quadratic</p> <p>Fibonacci number</p> <p>Fibonacci sequence</p> <p>Notation</p> <p>T(n) is often used to indicate the ‘nth term’</p>	<p>Recognise Fibonacci sequences;</p> <p>Generate arithmetic sequences of numbers, triangular number, square and cube integers and sequences derived from diagrams;</p> <p>Recognise such sequences from diagrams and draw the next term in a pattern sequence;</p> <p>Find the next term in a sequence, including negative values;</p> <p>Find the nth term for a pattern sequence; a linear sequence; of an arithmetic sequence;</p> <p>Use the nth term of an arithmetic sequence to generate terms;</p> <p>decide if a given number is a term in the sequence, or find the first term over a certain number;</p> <p>find the first term greater/less than a certain number;</p> <p>Continue a geometric progression and find the term-to-term rule, including negatives, fraction and decimal terms;</p> <p>Continue a quadratic sequence and use the nth term to generate terms;</p> <p>Distinguish between arithmetic and geometric sequences.</p>	<p>Recognise sequences of odd and even numbers, and other sequences including Fibonacci sequences;</p> <p>Use function machines to find terms of a sequence;</p> <p>Write the term-to-term definition of a sequence in words;</p> <p>Find a specific term in the sequence using position-to-term or term-to-term rules;</p>	<p>There will be a written piece of homework each week to reinforce key concepts.</p>



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<p>Unit 6a—Shapes, parallel lines and angle facts</p>	<p>To understand and use alternate and corresponding angles on parallel lines</p> <p>To understand and use properties of triangles to find missing angles</p> <p>To develop geometric reasoning skills</p>	<p>Degrees</p> <p>Right angle,</p> <p>acute angle,</p> <p>obtuse angle,</p> <p>reflex angle</p> <p>Vertically opposite</p> <p>Geometry, geometrical</p> <p>Parallel</p> <p>Alternate angles,</p> <p>Corresponding angles</p> <p>Interior angle,</p> <p>Exterior angle</p>	<p>Recall and use properties of angles at a point, on a straight line, right angles, and vertically opposite angles.</p> <p>Find missing angles using properties of corresponding, alternate and co-interior angles;</p> <p>Understand and use the angle properties of parallel lines.</p> <p>Given some information about a shape on coordinate axes, complete the shape; Understand and use the angle properties of quadrilaterals;</p> <p>Use the fact that angle sum of a quadrilateral is 360°;</p> <p>Distinguish between scalene, equilateral, isosceles and right-angled triangles;</p> <p>Derive and use the sum of angles in a triangle to find a missing angle in a triangle, given that the angle sum of a triangle is 180°;</p> <p>Understand and use the angle properties of triangles, use the symmetry property of isosceles triangle to show that base angles are equal;</p> <p>Use the side/angle properties of isosceles and equilateral triangles;</p>	<p>Estimate sizes of angles; Measure angles using a protractor;</p> <p>Use geometric language appropriately; Use letters to identify points, lines and angles;</p> <p>Use two-letter notation for a line and three-letter notation for an angle;</p> <p>Describe angles as turns and in degrees and understand clockwise and anticlockwise; Know that there are 360° in a full turn, 180° in a half turn and 90° in a quarter turn;</p> <p>Identify a line perpendicular to a given line on a diagram and use their properties;</p> <p>Identify parallel lines on a diagram and use their properties;</p> <p>Recall the properties and definitions of special types of quadrilaterals, including symmetry properties;</p> <p>List the properties of each special type of quadrilateral, or identify (name) a given shape;</p> <p>Classify quadrilaterals by their geometric properties and name all quadrilaterals that have a specific property;</p> <p>Identify quadrilaterals from everyday usage;</p>	<p>There will be a written piece of homework each week to reinforce key concepts.</p>



Topic	Learning Objectives	Key Vocabulary	Learning Sequence	Linked Learning	Home Learning
Unit 6a—Shapes, parallel lines and angle facts (Continued)	<p>To understand and use alternate and corresponding angles on parallel lines</p> <p>To understand and use properties of triangles to find missing angles</p> <p>To develop geometric reasoning skills</p>	<p>Degrees</p> <p>Right angle,</p> <p>acute angle,</p> <p>obtuse angle,</p> <p>reflex angle</p> <p>Vertically opposite</p> <p>Geometry, geometrical</p> <p>Parallel</p> <p>Alternate angles,</p> <p>Corresponding angles</p> <p>Interior angle,</p> <p>Exterior angle</p>	<p>Understand a proof that the exterior angle of a triangle is equal to the sum of the interior angles at the other two vertices;</p> <p>Use geometrical language appropriately, give reasons for angle calculations and show step-by-step deduction when solving problems.</p>	<p>Estimate sizes of angles; Measure angles using a protractor;</p> <p>Use geometric language appropriately; Use letters to identify points, lines and angles;</p> <p>Use two-letter notation for a line and three-letter notation for an angle;</p> <p>Describe angles as turns and in degrees and understand clockwise and anticlockwise; Know that there are 360° in a full turn, 180° in a half turn and 90° in a quarter turn;</p> <p>Identify a line perpendicular to a given line on a diagram and use their properties;</p> <p>Identify parallel lines on a diagram and use their properties;</p> <p>Recall the properties and definitions of special types of quadrilaterals, including symmetry properties;</p> <p>List the properties of each special type of quadrilateral, or identify (name) a given shape;</p> <p>Classify quadrilaterals by their geometric properties and name all quadrilaterals that have a specific property;</p> <p>Identify quadrilaterals from everyday usage;</p>	<p>There will be a written piece of homework each week to reinforce key concepts.</p>



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<p>Unit 6b— Angles and Polygons</p>	<p>To be able to derive and use the sum of angles in a triangle (e.g. to deduce and use the angle sum in any polygon, and to derive properties of regular polygons)</p>	<p>Interior angle, Exterior angle Regular polygon Irregular polygon Quadrilateral Pentagon Hexagon Heptagon Octagon Nonagon Decagon</p>	<p>Understand ‘regular’ and ‘irregular’ as applied to polygons; Use the sum of angles of irregular polygons; Calculate and use the sums of the interior angles of polygons; Calculate and use the angles of regular polygons; Use the sum of the interior angles of an n-sided polygon; Use the sum of the exterior angles of any polygon is 360°; Use the sum of the interior angle and the exterior angle is 180°; Identify shapes which are congruent (by eye); Explain why some polygons fit together and others do not;</p>	<p>Recognise and name pentagons, hexagons, heptagons, octagons and decagons;</p>	<p>There will be a written piece of homework each week to reinforce key concepts.</p>



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<p>Unit 7—Statistics, Sampling and Averages</p>	<p>To be able to interpret, analyse and compare the distributions of data sets through appropriate measures of central tendency (median, mean, mode and modal class) and spread (range)</p>	<p>Average Spread Consistency Mean Median Mode Range Statistic Statistics Approximate, Round Calculate an estimate Grouped frequency Midpoint</p>	<p>Understand how sources of data may be biased and explain why a sample may not be representative of a whole population; Understand sample and population. Calculate the mean, mode, median and range for discrete data; Interpret and find a range of averages as follows: median, mean and range from a (discrete) frequency table; range, modal class, interval containing the median, and estimate of the mean from a grouped data frequency table; mode and range from a bar chart; median, mode and range from stem and leaf diagrams mean from a bar chart</p>	<p>Specify the problem and: plan an investigation; decide what data to collect and what statistical analysis is needed; consider fairness; Recognise types of data: primary secondary, quantitative and qualitative; Identify which primary data they need to collect and in what format, including grouped data; Collect data from a variety of suitable primary and secondary sources;</p>	<p>There will be a written piece of homework each week to reinforce key concepts.</p>



Topic	Learning Objectives	Key Vocabulary	Learning Sequence	Linked Learning	Home Learning
<p>Unit 7—Statistics, Sampling and Averages (Continued)</p>	<p>To</p>	<p>Average Spread Consistency Mean Median Mode Range Statistic Statistics Approximate, Round Calculate an estimate Grouped frequency Midpoint</p>	<p>Understand that the expression 'estimate' will be used where appropriate, when finding the mean of grouped data using mid-interval values;</p> <p>Compare the mean, median, mode and range (as appropriate) of two distributions using bar charts, dual bar charts, pictograms and back-to-back stem and leaf;</p> <p>Recognise the advantages and disadvantages between measures of average.</p>	<p>Specify the problem and: plan an investigation; decide what data to collect and what statistical analysis is needed; consider fairness;</p> <p>Recognise types of data: primary secondary, quantitative and qualitative;</p> <p>Identify which primary data they need to collect and in what format, including grouped data;</p> <p>Collect data from a variety of suitable primary and secondary sources;</p>	<p>There will be a written piece of homework each week to reinforce key concepts.</p>



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<p>Unit 8—Perimeter, Area and Volume</p>	<p>To be able to convert between units of measurement</p> <p>To apply and find perimeters and areas of shapes, including compound shapes</p> <p>To be able to calculate Surface Area</p> <p>To have a thorough understanding of nets</p> <p>To be able to calculate Volume of prisms</p>	<p>Length, distance</p> <p>Mass, weight</p> <p>Volume</p> <p>Capacity</p> <p>Metre, centimetre, millimetre</p> <p>Tonne, kilogram, gram, milligram</p> <p>Litre, millilitre</p> <p>Notation</p> <p>Abbreviations of units in the metric system: m, cm, mm, kg, g, l, ml</p> <p>Abbreviations of units in the Imperial system: lb, oz</p>	<p>Convert between units of measure within one system, including time and metric units to metric units of length, area and volume and capacity e.g. 1ml = 1cm³;</p> <p>Find the perimeter of Triangles and Trapezia using Pythagoras theorem and compound shapes;</p> <p>Find the area of a trapezium and recall the formula;</p> <p>Calculate areas and perimeters of compound shapes made from triangles and rectangles;</p> <p>Estimate surface areas by rounding measurements to 1 significant digit</p> <p>Find the surface area of a prism;</p> <p>Sketch nets of cuboids and prisms;</p> <p>Recall and use the formula for the volume of a cuboid; - lead to reasoning and contextual examples / problems. Find the volume of a prism, including a triangular prism, cube and cuboid;</p> <p>Calculate volumes of right prisms and shapes made from cubes and cuboids;</p> <p>Estimate volumes etc by rounding measurements to 1 significant digit</p>	<p>Indicate given values on a scale, including decimal value;</p> <p>Know that measurements using real numbers depend upon the choice of unit;</p> <p>Make sensible estimates of a range of measures in everyday settings;</p> <p>Measure shapes to find perimeters and areas using a range of scales;</p> <p>Find the perimeter of rectangles and triangles;</p> <p>parallelograms and trapezia;</p> <p>Recall and use the formulae for the area of a triangle and rectangle;</p> <p>Find the area of a parallelogram;</p> <p>Identify and name common solids: cube, cuboid, cylinder, prism, pyramid, sphere and cone;</p> <p>Recall and use the formula for the volume of a cuboid;</p>	<p>There will be a written piece of homework each week to reinforce key concepts.</p>



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Unit 9—Real life graphs and linear graphs	<p>To be able to work with geometrical information in all 4 quadrants.</p> <p>To be able to find the midpoints of line segments.</p> <p>To be able to draw straight line graphs.</p> <p>To be able to draw straight line graphs.</p> <p>To be able to draw and understand distance time and velocity time graphs.</p> <p>To be able to calculate speed distance and time.</p> <p>To be able to draw straight line graphs.</p>	<p>Linear</p> <p>Coordinate</p> <p>Line segment</p> <p>Distance</p> <p>Time</p> <p>Speed</p> <p>Velocity</p> <p>Gradient</p> <p>Intercept</p>	<p>Find the coordinates of points identified by geometrical information in 2D (all four quadrants);</p> <p>Find the coordinates of the midpoint of a line segment; Read values from straight-line graphs for real-life situations;</p> <p>Draw straight line graphs for real-life situations, including ready reckoner graphs, conversion graphs, fuel bills graphs, fixed charge and cost per unit;</p> <p>Draw distance–time graphs and velocity–time graphs;</p> <p>Work out time intervals for graph scales;</p> <p>Plot, draw and recognise graphs of $y = a$, $x = a$, $y = x$ and $y = -x$;</p> <p>Recognise that equations of the form $y = mx + c$ correspond to straight-line graphs in the coordinate plane;</p> <p>Plot and draw graphs of straight lines of the form $y = mx + c$ using a table of values;</p> <p>Sketch a graph of a linear function, using the gradient and y-intercept;</p>	<p>Use input/output diagrams;</p> <p>Draw, label and scale axes;</p> <p>Use axes and coordinates to specify points in all four quadrants in 2D;</p> <p>Identify points with given coordinates and coordinates of a given point in all four quadrants;</p>	<p>There will be a written piece of homework each week to reinforce key concepts.</p>



Topic	Learning Objectives	Key Vocabulary	Learning Sequence	Linked Learning	Home Learning
Unit 9—Real life graphs and linear graphs (Continued)	<p>To be able to calculate the gradient of a straight line.</p> <p>To be able to interpret real life graphs.</p> <p>To be able to draw and understand distance time and velocity time graphs.</p> <p>To be able to interpret straight line graphs.</p>	<p>Linear</p> <p>Coordinate</p> <p>Line segment</p> <p>Distance</p> <p>Time</p> <p>Speed</p> <p>Velocity</p> <p>Gradient</p> <p>Intercept</p>	<p>Identify and interpret gradient from an equation $y = mx + c$;</p> <p>Identify parallel lines from their equations;</p> <p>Plot and draw graphs of straight lines in the form $ax + by = c$;</p> <p>Find the equation of a straight line from a graph;</p> <p>Find the equation of the line through one point with a given gradient;</p> <p>Find approximate solutions to a linear equation from a graph;</p> <p>Find the gradient of a straight line</p> <p>Interpret distance–time graphs, and calculate: the speed of individual sections, total distance and total time;</p> <p>Interpret information presented in a range of linear and non-linear graphs;</p> <p>Interpret graphs with negative values on axes;</p> <p>Interpret gradient as the rate of change in distance–time and speed–time graphs, graphs of containers filling and emptying, and unit price graphs.</p>	<p>Use input/output diagrams;</p> <p>Draw, label and scale axes;</p> <p>Use axes and coordinates to specify points in all four quadrants in 2D;</p> <p>Identify points with given coordinates and coordinates of a given point in all four quadrants;</p>	<p>There will be a written piece of homework each week to reinforce key concepts.</p>



Topic	Learning Objectives	Key Vocabulary	Learning Sequence	Linked Learning	Home Learning
Unit 10– Transformations	<p>To be able to rotate a shape around a point.</p> <p>To be able to reflect a shape over a given line.</p> <p>To be able to describe a rotation.</p> <p>To be able to translate a given shape.</p> <p>To be able to describe a translation.</p> <p>To be able to enlarge a shape by a given scale factor.</p> <p>To be able to calculate the scale factor.</p> <p>To be able to find the centre of enlargement.</p> <p>To be able to fully describe an enlargement.</p> <p>To be able to fully describe all types of transformations.</p>	<p>Similar, Similarity</p> <p>Enlarge, enlargement</p> <p>Scaling</p> <p>Scale factor</p> <p>Centre of enlargement</p> <p>Object</p> <p>Image</p> <p>Reflect</p> <p>Rotate,</p> <p>Translate</p>	<p>Identify congruent shapes by eye;</p> <p>Understand that rotations are specified by a centre, an angle and a direction of rotation;</p> <p>Find the centre of rotation, angle and direction of rotation and describe rotations fully using the angle, direction of turn, and centre;</p> <p>Rotate and draw the position of a shape after rotation about the origin or any other point including rotations on a coordinate grid;</p> <p>Identify correct rotations from a choice of diagrams;</p> <p>Understand that translations are specified by a distance and direction using a vector;</p> <p>Translate a given shape by a vector;</p> <p>Use column vectors to describe and transform 2D shapes using single translations on a coordinate grid;</p> <p>Understand that distances and angles are preserved under rotations and translations, so that any figure is congruent under either of these transformations;</p> <p>Understand that reflections are specified by a mirror line;</p>	<p>To be able to work with shapes on a coordinate grid.</p> <p>Understand coordinates.</p> <p>Understand lines with the equations $x=$ and $y=$</p>	<p>There will be a written piece of homework each week to reinforce key concepts.</p>



Topic	Learning Objectives	Key Vocabulary	Learning Sequence	Linked Learning	Home Learning
<p>Unit 10– Transformations (Continued)</p>			<p>Identify correct reflections from a choice of diagrams;</p> <p>Identify the equation of a line of symmetry;</p> <p>Transform 2D shapes using single reflections (including those not on coordinate grids) with vertical, horizontal and diagonal mirror lines;</p> <p>Describe reflections on a coordinate grid;</p> <p>Scale a shape on a grid (without a centre specified);</p> <p>Understand that an enlargement is specified by a centre and a scale factor;</p> <p>Enlarge a given shape using (0, 0) as the centre of enlargement, and enlarge shapes with a centre other than (0, 0);</p> <p>Find the centre of enlargement by drawing;</p> <p>Describe and transform 2D shapes using enlargements by:</p> <p>a positive integer scale factor;</p> <p>a fractional scale factor;</p>		



Topic	Learning Objectives	Key Vocabulary	Learning Sequence	Linked Learning	Home Learning
<p>Unit 10– Transformations (Continued)</p>			<p>Describe and transform 2D shapes using enlargements by:</p> <ul style="list-style-type: none"> a positive integer scale factor; a fractional scale factor; <p>Identify the scale factor of an enlargement of a shape as the ratio of the lengths of two corresponding sides, simple integer scale factors, or simple fractions;</p> <p>Understand that distances and angles are preserved under reflections, so that any figure is congruent under this transformation;</p> <p>Understand that similar shapes are enlargements of each other and angles are preserved – define similar in this unit;</p>		



Topic	Learning Objectives	Key Vocabulary	Learning Sequence	Linked Learning	Home Learning
Topic 11a– Ratio	<p>Taught through bar modelling</p> <p>To be able to simplify ratios including those with different units.</p> <p>To be able to write a ratio to describe a situation</p> <p>To be able to share in a given ratio</p> <p>To be able to solve problems involving ratios where one part is given</p> <p>To be able to solve ratio problems in context</p> <p>To be able to compare ratios</p> <p>To write ratios in the form 1:n</p>	<p>Simplify</p> <p>Share</p> <p>Ratio</p> <p>Parts</p> <p>Compare</p>	<p>Understand and express the division of a quantity into a of number parts as a ratio;</p> <p>Write ratios in their simplest form</p> <p>Write/interpret a ratio to describe a situation;</p> <p>Share a quantity in a given ratio including three-part ratios;</p> <p>Solve a ratio problem in context:</p> <p>use a ratio to find one quantity when the other is known;</p> <p>use a ratio to compare a scale model to a real-life object;</p> <p>use a ratio to convert between measures and currencies;</p> <p>problems involving mixing, e.g. paint colours, cement and drawn conclusions;</p> <p>Compare ratios;</p> <p>Write ratios in form 1 : m or m : 1;</p> <p>Write a ratio as a fraction;</p> <p>Write a ratio as a linear function;</p> <p>Write lengths, areas and volumes of two shapes as ratios in simplest form;</p> <p>Express a multiplicative relationship between two quantities as a ratio or a fraction.</p>	<p>Understand how to write a ratio</p> <p>Understand basic proportion.</p>	<p>There will be a written piece of homework each week to reinforce key concepts.</p>



Topic	Learning Objectives	Key Vocabulary	Learning Sequence	Linked Learning	Home Learning
11b- Proportion	<p>To be able to use basic direct proportion</p> <p>To be able to solve problems involving best buys.</p> <p>To be able to solve problems involving recipes.</p> <p>To be able to use direct proportion and understand graphs relating to direct proportion.</p> <p>To be able to understand and work with basic inverse proportion.</p>	<p>Proportion</p> <p>Direct</p> <p>Inverse</p>	<p>Understand and use proportion as equality of ratios;</p> <p>Solve word problems involving direct and indirect proportion;</p> <p>Work out which product is the better buy;</p> <p>Scale up recipes;</p> <p>Convert between currencies;</p> <p>Find amounts for 3 people when amount for 1 given;</p> <p>Solve proportion problems using the unitary method;</p> <p>Recognise when values are in direct proportion by reference to the graph form;</p> <p>Understand inverse proportion: as x increases, y decreases (inverse graphs done in later unit);</p> <p>Recognise when values are in direct proportion by reference to the graph form;</p> <p>Understand direct proportion relationship $y = kx$.</p>	<p>Understand basic graphs</p> <p>Plot coordinates</p>	<p>There will be a written piece of homework each week to reinforce key concepts.</p>



Topic	Learning Objectives	Key Vocabulary	Learning Sequence	Linked Learning	Home Learning
Unit 12— Pythagoras and Trigonometry	<p>To be able to calculate the longest side in a right angled triangle.</p> <p>To be able to calculate any side in a right angled triangle.</p> <p>To be able to decide which trigonometric ratio to use.</p> <p>To be able to calculate missing sides using trigonometry.</p> <p>To calculate missing angles using trigonometry.</p> <p>To be able to recall exact values using trig ratios.</p>	<p>Ratio</p> <p>Cosine</p> <p>Sine</p> <p>Tangent</p> <p>Hypotenuse</p> <p>Adjacent</p> <p>Opposite</p>	<p>Understand, recall and use Pythagoras' Theorem in 2D, including leaving answers in surd form and being able to justify if a triangle is right-angled or not;</p> <p>Calculate the length of the hypotenuse and of a shorter side in a right-angled triangle, including decimal lengths and a range of units;</p> <p>Apply Pythagoras' Theorem with a triangle drawn on a coordinate grid;</p> <p>Calculate the length of a line segment AB given pairs of points;</p> <p>Understand, use and recall the trigonometric ratios sine, cosine and tan, and apply them to find angles and lengths in general triangles in 2D figures; Use the trigonometric ratios to solve 2D problems including angles of elevation and depression;</p> <p>Round answers to appropriate degree of accuracy.</p> <p>Know the exact values of $\sin \theta$ and $\cos \theta$ for $\theta = 0^\circ, 30^\circ, 45^\circ, 60^\circ$ and 90°; know the exact value of $\tan \theta$ for $\theta = 0^\circ, 30^\circ, 45^\circ$ and 60° and introduce the proof.</p>	<p>Be able to use squares and square roots.</p> <p>Understand properties of triangles.</p>	<p>There will be a written piece of homework each week to reinforce key concepts.</p>



Topic	Learning Objectives	Key Vocabulary	Learning Sequence	Linked Learning	Home Learning
Unit 13— Probability	<p>To write probabilities in words or fractions, decimals and percentages.</p> <p>To be able to find the probability of an event happening using theoretical probability.</p> <p>To be able to calculate probabilities from a variety of tables.</p> <p>To be able to add simple probabilities.</p> <p>To find a missing probability from a list or table including algebraic terms;</p> <p>Find the probability of an event happening using relative frequency.</p> <p>To be able to list all outcomes for combined events systematically.</p> <p>Use and draw sample space diagrams and calculate probabilities from them.</p> <p>To be able to work with Venn diagrams and probability.</p> <p>To be able to use tree diagrams to calculate probability.</p>	<p>Probability</p> <p>Event</p> <p>Sample space</p> <p>Bias</p> <p>Relative frequency</p> <p>Theoretical probability</p> <p>Venn</p> <p>Tree diagrams</p> <p>Mutually exclusive</p> <p>Independent</p> <p>Dependant</p>	<p>Write probabilities in words or fractions, decimals and percentages;</p> <p>Find the probability of an event happening using theoretical probability;</p> <p>Use theoretical models to include outcomes using dice, spinners, coins;</p> <p>Work out probabilities from frequency tables, frequency trees, and two way tables;</p> <p>Record outcomes of probability experiments in tables;</p> <p>Add simple probabilities;</p> <p>Find a missing probability from a list or table including algebraic terms;</p> <p>Find the probability of an event happening using relative frequency;</p> <p>Estimate the number of times an event will occur, given the probability and the number of trials – for both experimental and theoretical probabilities;</p> <p>List all outcomes for combined events systematically;</p> <p>Use and draw sample space diagrams;</p>	<p>Distinguish between events which are impossible, unlikely, even chance, likely, and certain to occur;</p> <p>Mark events and/or probabilities on a probability scale of 0 to 1;</p> <p>List all outcomes for single events systematically;</p> <p>Recap adding fractions and decimals</p> <p>Identify different mutually exclusive outcomes and know that the sum of the probabilities of all outcomes is 1;</p> <p>Using $1 - p$ as the probability of an event not occurring where p is the probability of the event occurring;</p>	<p>There will be a written piece of homework each week to reinforce key concepts.</p>



Topic	Learning Objectives	Key Vocabulary	Learning Sequence	Linked Learning	Home Learning
<p>Unit 13— Probability (Continued)</p>			<p>Work out probabilities from Venn diagrams to represent real-life situations and also ‘abstract’ sets of numbers/values;</p> <p>Use union and intersection notation;</p> <p>Compare experimental data and theoretical probabilities;</p> <p>Compare relative frequencies from samples of different sizes;</p> <p>Find the probability of successive events, such as several throws of a single dice;</p> <p>Use tree diagrams to calculate the probability of two independent events;</p> <p>Use tree diagrams to calculate the probability of two dependent events.</p>		



Topic	Learning Objectives	Key Vocabulary	Learning Sequence	Linked Learning	Home Learning
Unit 14– Multiplicative reasoning	<p>To be able to work with density.</p> <p>To be able to work with pressure.</p> <p>To be able to work with and calculate speed distance and time.</p> <p>To be able to express one percentage as a percentage of another.</p> <p>To be able to calculate percentage profit and loss.</p> <p>To be able to calculate repeat percentage change.</p> <p>To be able to apply and use the formula for compound interest.</p> <p>To be able to calculate reverse percentages.</p> <p>To be able to work with proportion in given problems.</p>	<p>Density</p> <p>Pressure</p> <p>Speed</p> <p>Distance</p> <p>Time</p> <p>Acceleration</p> <p>Percentage</p>	<p>Understand and use compound measures:</p> <p>Density, pressure, speed</p> <p>Convert between metric speed measures;</p> <p>read values in km/h and mph from a speedometer;</p> <p>calculate average speed, distance, time – in miles per hour as well as metric measures;</p> <p>use kinematics formulae from the formulae sheet to calculate speed, acceleration (with variables defined in the question);</p> <p>change d/t in m/s to a formula in km/h, i.e. $d/t \times (60 \times 60)/1000$ – with support;</p> <p>Express a given number as a percentage of another number in more complex situations;</p> <p>Calculate percentage profit or loss;</p> <p>Make calculations involving repeated percentage change, not using the formula;</p> <p>Find the original amount given the final amount after a percentage increase or decrease;</p> <p>Use compound interest</p>	<p>To understand basic percentage.</p> <p>To understand basic compound measures.</p> <p>To be able to convert between units.</p> <p>To have an understanding of where we use compound measures and problems that they apply to.</p>	<p>There will be a written piece of homework each week to reinforce key concepts.</p>



Topic	Learning Objectives	Key Vocabulary	Learning Sequence	Linked Learning	Home Learning
<p>Unit 14– Multiplicative reasoning (Continued)</p>			<p>Use a variety of measures in ratio and proportion problems:</p> <p>currency conversion; rates of pay / best value;</p> <p>Set up, solve and interpret the answers in growth and decay problems;</p> <p>Understand that X is inversely proportional to Y is equivalent to X is proportional to ;</p> <p>Interpret equations that describe direct and inverse proportion.</p>		<p>There will be a written piece of homework each week to reinforce key concepts.</p>
<p>Unit 15— Plans and Elevations</p>	<p>To be able to sketch planes of 3D shapes.</p> <p>To draw plans and elevations of 3D shapes.</p> <p>To make accurate drawings of triangles.</p> <p>To be able to bisect lines and angles.</p> <p>To construct diagrams given a range of information.</p>	<p>Plan</p> <p>Elevation</p> <p>Sketch</p> <p>Protractor</p> <p>Perpendicular</p>	<p>Identify and sketch planes of symmetry of 3D solids;</p> <p>Use isometric grids to draw 2D representations of 3D solids;</p> <p>Make accurate drawings of triangles and other 2D shapes.</p> <p>Construct diagrams of everyday 2D situations involving rectangles, triangles, perpendicular and parallel lines;</p> <p>Understand and draw front and side elevations and plans of shapes made from simple solids;</p> <p>Given the front and side elevations and the plan of a solid, draw a sketch of the 3D solid.</p>	<p>Understand clockwise and anticlockwise;</p> <p>Draw circles and arcs to a given radius or given the diameter;</p> <p>Measure and draw lines, to the nearest mm;</p> <p>Measure and draw angles, to the nearest degree;</p> <p>Know and use compass directions;</p> <p>Draw sketches of 3D solids;</p> <p>Know the terms face, edge and vertex;</p>	<p>There will be a written piece of homework each week to reinforce key concepts.</p>



Topic	Learning Objectives	Key Vocabulary	Learning Sequence	Linked Learning	Home Learning
Unit 16– Fractions (2)	<p>To be able to add and subtract fractions including those involving mixed numbers.</p> <p>To be able to multiply fractions including those with mixed numbers.</p> <p>To be able to divide fractions including those with mixed numbers.</p> <p>To be able to find the reciprocal of a number.</p>	<p>Fraction</p> <p>Mixed number</p> <p>Improper</p> <p>Reciprocal</p> <p>Decimal</p>	<p>Add and subtract mixed number fractions;</p> <p>Multiply mixed number fractions;</p> <p>Divide mixed numbers by whole numbers and vice versa;</p> <p>Find the reciprocal of an integer, decimal or fraction;</p> <p>Understand ‘reciprocal’ as multiplicative inverse, knowing that any non-zero number multiplied by its reciprocal is 1 (and that zero has no reciprocal because division by zero is not defined).</p>	<p>Convert fractions between improper and mixed numbers.</p> <p>Understand that a fraction relates to the operation of division.</p> <p>To be able to find common denominators (multiples) of numbers.</p>	<p>There will be a written piece of homework each week to reinforce key concepts.</p>