



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



| Topic | Learning Objectives | Key Vocabulary | Learning Sequence | Linked Learning | Home Learning |
|--|---|--|---|--|---|
| <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> |



| Topic | Learning Objectives | Key Vocabulary | Learning Sequence | Linked Learning | Home Learning |
|--|---|---|---|---|---|
| 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> |



| Topic | Learning Objectives | Key Vocabulary | Learning Sequence | Linked Learning | Home Learning |
|---|--|--|---|---|---|
| <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>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>Express a given number as a percentage of another number;</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 and % of profit or loss</p> <p>Simple and Compound 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>Make calculations involving repeated percentage change, not using the formula;</p> <p>Find the original amount given the final amount after a percentage</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 5a— Equations and Inequalities</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>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), ≤ (less than or equal to), ≥ (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>Write expressions and set up simple equations forming an equation from a word problem</p> <p>Solve simple equations: with integer coefficients, in which the unknown appears on either side or on both sides of the equation; which contain brackets, including those that have negative signs occurring anywhere in the equation, and those with a negative solution; 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>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> |



| Topic | Learning Objectives | Key Vocabulary | Learning Sequence | Linked Learning | Home Learning |
|--------------------------------------|--|---|--|---|---|
| <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> |



| Topic | Learning Objectives | Key Vocabulary | Learning Sequence | Linked Learning | Home Learning |
|--|--|---|--|---|---|
| <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;</p> <p>Find a missing angle in a triangle, using 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>Draw sketches of shapes;</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 |
|---------------------------------|--|---|---|---|---|
| <p>Unit 6a—continued</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>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>Draw sketches of shapes;</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 |
|--|---|---|--|--|---|
| <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> |



| Topic | Learning Objectives | Key Vocabulary | Learning Sequence | Linked Learning | Home Learning |
|--|---|---|---|--|---|
| <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; and stem and leaf diagrams; mean from a bar chart; Understand that the expression 'estimate' will be used where appropriate, when finding the mean of grouped data using mid-interval values;. 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; 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; 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 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 figure;</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 figure;</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; 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> |



| Topic | Learning Objectives | Key Vocabulary | Learning Sequence | Linked Learning | Home Learning |
|---|---|---|--|---|---|
| <p>Unit 9—Real life graphs and linear graphs</p> | <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 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 calculate speed distance and time.</p> <p>To be able to draw straight line graphs.</p> <p>To be able to interpret straight line graphs.</p> <p>To be able to calculate the gradient of a straight line.</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>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 |
|---|---------------------|----------------|--|-----------------|---------------|
| <p>Unit 9—Real life graphs and linear graphs (Continued)</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>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 from real-life graphs too.</p> | | |



| Topic | Learning Objectives | Key Vocabulary | Learning Sequence | Linked Learning | Home Learning |
|--|--|---|--|---|---|
| <p>Unit 10– Transformations</p> | <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</p> <p>Similarity</p> <p>Enlarge</p> <p>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</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>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>Extend where units are not the same</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>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 |
|-------------------------------------|---|--|--|---|--|
| Topic 11a– Ratio (Continued) | To be able to compare ratios To write ratios in the form 1:n | Simplify Share Ratio Parts Compare | Compare ratios; Write ratios in form 1 : m or m : 1; Write a ratio as a fraction; Write a ratio as a linear function; Write lengths, areas and volumes of two shapes as ratios (simplest form) Express a multiplicative relationship between two quantities as a ratio or a fraction. | Understand how to write a ratio Understand basic proportion. | There will be a written piece of homework each week to reinforce key concepts. |
| 11b– Proportion | To be able to use basic direct proportion To be able to solve problems involving best buys. To be able to solve problems involving recipes. To be able to use direct proportion and understand graphs relating to direct proportion. To be able to understand and work with basic inverse proportion. | Proportion Direct Inverse | Understand and use proportion as equality of ratios; Work out which product is the better buy; Convert between currencies; Find amounts for 3 people when amount for 1 given; Solve proportion problems using the unitary method; Recognise when values are in direct proportion using graphs Understand inverse proportion: as x increases, y decreases Recognise when values are in direct proportion by reference to the graph form; Understand direct proportion relationship $y = kx$. | Understand basic graphs Plot coordinates | There will be a written piece of homework each week to reinforce key concepts. |



| 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>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 12— Pythagoras and Trigonometry (Continued) | To be able to apply appropriate rounding to the results of calculations | Ratio Cosine Sine Tangent Hypotenuse Adjacent Opposite | Round answers to appropriate degree of accuracy, either to a given number of significant figures or decimal places, or make a sensible decision on rounding in context of question; 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. | Be able to use squares and square roots. Understand properties of triangles. | There will be a written piece of homework each week to reinforce key concepts. |



| 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 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> | |



| Topic | Learning Objectives | Key Vocabulary | Learning Sequence | Linked Learning | Home Learning |
|--|--|---|--|-----------------|---------------|
| <p>Unit 13— Probability (Continued)</p> | <p>To be able to work with Venn diagrams and probability. To be able to use tree diagrams to calculate probability.</p> | <p>Probability Event Sample space Bias Relative frequency Theoretical probability Venn Tree diagrams Mutually exclusive Independent Dependant</p> | <p>Work out probabilities from Venn diagrams to represent real-life situations and also ‘abstract’ sets of numbers/values; Use union and intersection notation; Compare experimental data and theoretical probabilities; Compare relative frequencies from samples of different sizes; Find the probability of successive events, such as several throws of a single dice; Use tree diagrams to calculate the probability of two independent events; 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>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;</p> <p>pressure;</p> <p>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>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>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>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>Use a variety of measures in ratio and proportion problems: 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>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 |
|--------------------------------------|--|--|--|---|---|
| Unit 15— Plans and Elevations | <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 using a ruler and a protractor;</p> <p>Construct diagrams of everyday 2D</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> |
| 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> | |