



Topic	Learning Objectives	Key Vocabulary	Learning Sequence	Linked Learning	Home Learning
Numbers and the number system	<p>Be able to identify the value of each digit in numbers given to three decimal places</p> <p>Be able to multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places</p> <p>Be able to use negative numbers in context, and calculate intervals across zero</p> <p>Be able to identify common factors, common multiples and prime numbers</p>	<p>Place value</p> <p>Digit</p> <p>Negative number</p> <p>(Common) multiple</p> <p>(Common) factor</p> <p>Divisible</p> <p>Prime number</p> <p>Composite number</p>	<p>Write and read numbers up to and including 10 000 000</p> <p>Compare and order numbers up to and including 10 000 000</p> <p>Multiply numbers by 10, 100, 1000</p> <p>Divide numbers by 10, 100, 1000</p> <p>Understand and use negative numbers when working in context, such as temperature</p> <p>Calculate intervals across zero</p> <p>Find common multiples of two numbers</p> <p>Find common factors of two numbers</p>	<p>Understand and use place value in numbers with up to seven digits</p> <p>Multiply and divide whole numbers by 10, 100, 1000</p> <p>Multiply and divide numbers with one decimal place by 10, 100, 1000</p> <p>Know the meaning of 'factor' and 'multiple' and 'prime'</p>	<p>There will be a written piece of homework each week to reinforce key concepts.</p>
Checking, approximating and estimating	<p>Be able to solve problems which require answers to be rounded to specified degrees of accuracy</p> <p>Be able to use estimation to check answers to calculations</p> <p>Be able to round any whole number to a required degree of accuracy</p>	<p>Approximate</p> <p>Round</p> <p>Decimal place</p> <p>Solution</p> <p>Estimate</p> <p>Accuracy</p>	<p>Round a number to the nearest 10, 100, 1000</p> <p>Round a number to the nearest whole number</p> <p>Round a number to the nearest 1 and 2 decimal places</p> <p>Understand estimating as the process of finding a rough value of an answer or calculation</p>	<p>Approximate any number by rounding to the nearest 10, 100 or 1000, 10 000 or 100 000</p> <p>Approximate any number with one or two decimal places by rounding to the nearest whole number</p> <p>Approximate any number with two decimal places by rounding to the one decimal place</p> <p>Estimate addition (subtraction) calculations with up to four digits</p>	<p>There will be a written piece of homework each week to reinforce key concepts.</p>



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Calculating	<p>Be able to perform mental calculations, including with mixed operations and large numbers</p> <p>Be able to solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why</p>	Addition Subtraction Sum Total Difference Minus Less Operation Multiply Multiplication Times Product Commutative	<p>Carry out addition calculations mentally involving numbers up to 4 digits</p> <p>Carry out subtraction calculations mentally involving numbers up to 4 digits</p> <p>Solve addition and subtraction multi-step problems in context</p> <p>Multiply a two and three-digit numbers by a two-digit</p>	<p>Recall multiplication facts for multiplication tables up to 12×12</p> <p>Understand the commutativity of multiplication and addition</p> <p>Multiply a three-digit number by a two-digit number using short multiplication</p> <p>Use column addition and subtraction for numbers with more than four digits</p>	<p>There will be a written piece of homework each week to reinforce key concepts.</p>



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Calculating (multiplication)	<p>Be able to multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication</p> <p>Be able to solve problems involving multiplication</p> <p>Be able to use their knowledge of the order of operations to carry out calculations</p>	<p>Operation</p> <p>Multiply</p> <p>Product</p> <p>Commutative</p> <p>Factor</p>	<p>Multiply a two or three-digit numbers by a two-digit number</p> <p>Multiply a four-digit number by a two-digit number using long multiplication</p> <p>Carry out calculations involving mixture of multiplication and addition/subtraction</p> <p>Solve multi-step problems involving addition, subtraction and/or multiplication</p> <p>Check the order of magnitude of the solution to a calculation, including decimals</p>	<p>Recall multiplication facts for multiplication tables up to 12×12</p> <p>Understand the commutativity of multiplication and addition</p> <p>Multiply a three-digit number by a two-digit number using short multiplication</p>	<p>There will be a written piece of homework each week to reinforce key concepts.</p>
Calculating (division)	<p>Be able to divide numbers up to 4 digits by a two-digit whole number using long division</p> <p>Be able to divide numbers up to 4 digits by a two-digit number using short division</p> <p>Be able to use written division methods in cases where the answer has up to two decimal places</p> <p>Be able to solve problems involving division</p>	<p>Division</p> <p>Divisor</p> <p>Quotient</p> <p>Remainder</p> <p>Estimate</p>	<p>Divide a three-digit number by a two-digit number when there is no remainder</p> <p>Divide a three-digit number by a two-digit number when there is a remainder</p> <p>Divide a four-digit number by a two-digit number when there is no remainder</p> <p>Divide a four-digit number by a two-digit number when there is a remainder</p> <p>Understand how to interpret remainders to a division problem appropriately for the context</p>	<p>Recall division facts for multiplication tables up to 12×12</p> <p>Recall written methods of short division for numbers up to four-digits divided by a one-digit number</p> <p>Deal with remainders when carrying out division</p> <p>Solve problems involving the four operations</p> <p>Solve problems involving division</p>	<p>There will be a written piece of homework each week to reinforce key concepts.</p>



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Visualising and constructing	<p>Be able to draw 2-D shapes using given dimensions and angles</p> <p>Be able to recognise, describe and build simple 3-D shapes, including making nets</p>	Protractor Measure Cube Cuboid Cylinder Pyramid Prism Net Edge Face Vertex (Vertices) Visualise	<p>Draw 2-D shapes given dimensions and angles</p> <p>Recognise prisms and pyramids</p> <p>Classify 3-D shapes including cylinders, cones and spheres</p> <p>Build 3-D shapes from nets</p> <p>Draw nets of 3-D shapes</p> <p>Solve 3-D problems using nets</p>	<p>Know the names of common 2D shapes</p> <p>Know the names of common 3D shapes</p> <p>Use a protractor to measure and draw angles</p>	<p>There will be a written piece of homework each week to reinforce key concepts.</p>



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<p>Exploring fractions, decimals and percentages</p>	<p>Be able to use common factors to simplify fractions; use common multiples to express fractions in the same denomination</p> <p>Be able to compare and order fractions, including fractions > 1</p> <p>Be able to associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, $\frac{3}{8}$]</p> <p>Be able to recall and use equivalences between simple fractions, decimals and percentages, including in different contexts</p>	<p>Fraction</p> <p>Improper fraction</p> <p>Proper fraction</p> <p>Vulgar fraction</p> <p>Top-heavy fraction</p> <p>Percentage</p> <p>Decimal</p> <p>Proportion</p> <p>Simplify</p> <p>Equivalent</p> <p>Lowest terms</p>	<p>Use common factors to simplify fractions</p> <p>Use common multiples to find equivalent fractions</p> <p>Compare and order fractions</p> <p>Compare and order fractions, including fractions > 1</p> <p>Understand a fraction is associated with division</p> <p>Work out the decimal equivalents of fifths, eighths and tenths</p> <p>Know simple fractions, decimals and percentages equivalences (e.g. 10%, 20%, 25%, 50%, 75%, 100%)</p> <p>Find equivalencies between fractions, decimals and percentages</p>	<p>Understand the concept of a fraction as a proportion</p> <p>Understand the concept of equivalent fractions</p> <p>Understand the concept of fractions, decimals and percentages being equivalent</p> <p>Know standard fraction / decimal equivalences (e.g. $\frac{1}{2} = 0.5$, $\frac{1}{4} = 0.25$, $\frac{1}{10} = 0.1$)</p> <p>Know that a percentage means ‘out of 100’</p>	<p>There will be a written piece of homework each week to reinforce key concepts.</p>



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<p>Proportional reasoning</p>	<p>Be able to solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts</p> <p>Be able to solve problems involving similar shapes where the scale factor is known or can be found</p> <p>Be able to solve problems involving unequal sharing and grouping using knowledge of fractions and multiples</p>	<p>Proportion</p> <p>Quantity</p> <p>Integer</p> <p>Similar (shapes)</p> <p>Enlargement</p> <p>Scale factor</p> <p>Group</p> <p>Share</p> <p>Multiples</p>	<p>Solve simple problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts; e.g. find the value of the parts, given the whole)</p> <p>Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts; e.g. find the value of the whole and parts, given one part)</p> <p>Use a scale factor to solve problems involving similar shapes</p> <p>Find the scale factor of similar shapes</p> <p>Solve problems involving unequal sharing or grouping problems using fractions</p> <p>Solve problems involving unequal sharing or grouping problems using multiples</p>	<p>Recall multiplication facts for multiplication tables up to 12×12</p> <p>Recall division facts for multiplication tables up to 12×12</p> <p>Find fractions of an amount</p> <p>Find multiples of a given number</p>	<p>There will be a written piece of homework each week to reinforce key concepts.</p>



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Pattern sniffing	Be able to generate and describe linear number sequences	Pattern Sequence Linear Term Ascending Descending	Recognise and describe a linear sequence Find the next terms in a linear sequence Find a missing term in a linear sequence Generate a linear sequence from its description	Count forwards and backwards in tens (hundreds, thousands) from any positive number up to 10 000 (100 000, 1 000 000) Count forwards and backwards through zero	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
Pattern Sniffing	generate terms of a sequence from a term-to-term rule	Pattern Sequence Linear Term Term-to-term rule Ascending Descending	Recognise simple arithmetic progressions Use a term-to-term rule to generate a linear sequence Use a term-to-term rule to generate a non-linear sequence	Know the vocabulary of sequences Find the next term in a linear sequence Find a missing term in a linear sequence Generate a linear sequence from its description	There will be a written piece of homework each week to reinforce key concepts.
Measuring Space	use standard units of measure and related concepts (length, area, volume/capacity, mass, time, money, etc.) use standard units of mass, length, time, money and other measures (including standard compound measures) using decimal quantities where appropriate change freely between related standard units (e.g. time, length, area, volume/capacity, mass) in numerical contexts measure line segments and angles in geometric figures	Length Distance Mass Weight Volume Capacity Metre, centimetre, millimetre Tonne, kilogram, gram, milligram Litre, millilitre Hour, minute, second Inch, foot, yard Pound, ounce Pint, gallon Line segment	Use a ruler to accurately measure line segments to the nearest millimetre Use a protractor to accurately measure angles to the nearest degree Convert fluently between metric units of length Convert fluently between metric units of mass Convert fluently between metric units of volume / capacity Convert fluently between units of time Convert fluently between units of money	Convert between metric units Use decimal notation up to three decimal places when converting metric units Convert between common Imperial units; e.g. feet and inches, pounds and ounces, pints and gallons Convert between units of time Use 12- and 24-hour clocks, both analogue and digital	There will be a written piece of homework each week to reinforce key concepts.



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<p>Investigating Angles</p>	<p>Apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles</p>	<p>Angle Degrees Right angle Acute angle Obtuse angle Reflex angle Protractor Vertically opposite Geometry Geometrical</p> <p>Notation Right angle notation Arc notation for all other angles The degree symbol (°)</p>	<p>Recognise and solve problems using vertically opposite angles</p> <p>Recognise and solve problems using angles at a point</p> <p>Recognise and solve problems using angles at a point on a line</p>	<p>Identify angles that meet at a point</p> <p>Identify angles that meet at a point on a line</p> <p>Identify vertically opposite angles</p> <p>Know that vertically opposite angles are equal</p>	<p>There will be a written piece of homework each week to reinforce key concepts.</p>



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<p>Calculating fractions, decimals and percentages</p>	<p>Be able to add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions</p> <p>Be able to multiply simple pairs of proper fractions, writing the answer in its simplest form (for example, $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$)</p> <p>Be able to divide proper fractions by whole numbers (for example, $\frac{1}{3} \div 2 = \frac{1}{6}$)</p> <p>Be able to multiply one-digit numbers with up to two decimal places by whole numbers</p> <p>Be able to solve problems involving the calculation of percentages (for example, of measures, and such as 15% of 360)</p> <p>and the use of percentages for comparison</p>	<p>Mixed number</p> <p>Equivalent fraction</p> <p>Simplify, cancel</p> <p>Lowest terms</p> <p>Proper fraction</p> <p>Improper fraction, top-heavy fraction</p> <p>Vulgar fraction</p> <p>Numerator, denominator</p> <p>Percent, percentage</p>	<p>Add fractions with different denominators</p> <p>Add a mixed number and a fraction, including with different denominators</p> <p>Add mixed numbers, including with different denominators</p> <p>Subtract fractions with different denominators</p> <p>Subtract a mixed number and a fraction, including with different denominators</p> <p>Subtract mixed numbers, including with different denominators</p> <p>Multiply a proper fraction by a proper fraction</p> <p>Divide a proper fraction by a whole number</p> <p>Multiply U.t by U</p> <p>Multiply U.th by U</p> <p>Calculate percentages of a quantity</p> <p>Solve problems involving the use of percentages to make comparisons</p>	<p>Convert between mixed numbers and improper fractions</p> <p>Find equivalent fractions</p> <p>Add and subtract fractions when one denominator is a multiple of the other</p> <p>Multiply a proper fraction by a whole number</p> <p>Use the formal written method of short multiplication</p> <p>Know the effect of multiplying and dividing by 10 and 100</p> <p>Know percentage equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{3}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$</p>	<p>There will be a written piece of homework each week to reinforce key concepts.</p>



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Calculating Space	<p>Recognise that shapes with the same areas can have different perimeters and vice versa</p> <p>calculate the area of parallelograms and triangles</p> <p>calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm³) and cubic metres (m³), and extending to other units (for example, mm³ and km³)</p> <p>recognise when it is possible to use formulae for area and volume of shape</p> <p>solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate</p>	<p>Perimeter</p> <p>Area</p> <p>Volume</p> <p>Capacity</p> <p>Square, rectangle, parallelogram, triangle</p> <p>Composite rectilinear</p> <p>Polygon</p> <p>Cube, cuboid</p> <p>Millimetre, Centimetre, Metre, Kilometre</p> <p>Square millimetre, square centimetre, square metre, square kilometre</p> <p>Cubic centimetre, centimetre cube</p> <p>Formula, formulae</p> <p>Convert</p> <p>Length</p> <p>Breadth</p> <p>Depth</p> <p>Height</p> <p>Width</p>	<p>Recognise that shapes with the same areas can have different perimeters and vice versa</p> <p>Calculate the area of a parallelogram</p> <p>Calculate the area of a triangle</p> <p>Estimate the volume of cubes and cuboids</p> <p>Calculate the volume of cuboid, including cubes</p> <p>Recognise when it is possible to use formulae to calculate area and volume</p> <p>Convert between metric units of area in simple cases</p> <p>Convert between metric units of volume in simple cases</p>	<p>Know the meaning of perimeter (area, volume, capacity)</p> <p>Know that the area of a rectangle is given by the formula area = length × width</p> <p>Know that area can be measured using square centimetres or square metres, and the abbreviations cm² and m²</p> <p>Know that volume is measured in cubes</p>	<p>There will be a written piece of homework each week to reinforce key concepts.</p>



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Mathematical Movement	describe positions on the full coordinate grid (all four quadrants) draw and translate simple shapes on the coordinate plane, and reflect them in the axes	2-D Grid Axis, axes, x & y-axis Origin Quadrant (Cartesian) coordinates Point Translation Reflection Transformation Object, Image Congruent, congruence	Use coordinates to describe the position of a point in all four quadrants Use coordinates to plot the position of a point in any of the four quadrants Draw and translate simple shapes Carry out a reflection using one of the axes as a mirror line	Use coordinates in the first quadrant Identify a translation Carry out a translation in the first quadrant Identify a reflection Carry out a reflection in the first quadrant using mirror lines parallel to the axes Know the meaning of 'congruent', 'congruence', 'object', 'image'	There will be a written piece of homework each week to reinforce key concepts.
Presentation of Data	interpret and construct pie charts and line graphs and use these to solve problems	Data Scale Axis, axes Graph Frequency Time graph, Time series Line graph Pie chart, Sector Angle, Protractor, Degrees Maximum, minimum	Interpret pie charts Construct a pie chart by measuring angles Interpret line graphs Construct line graphs	Measure and construct angles using a protractor Interpret and construct a simple line graph	There will be a written piece of homework each week to reinforce key concepts.



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Measuring Data	calculate and interpret the mean as an average	Average Mean Measure Data Statistic Statistics Approximate Round	Understand the meaning of 'average' as a typicality (or location) Calculate the mean of a set of discrete data Interpret the mean of a set of discrete data Use the mean to find a missing number in a set of data	Approximate a number by rounding to a given number of decimal places	There will be a written piece of homework each week to reinforce key concepts.