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Topic	Learning Objectives	Key Vocabulary	Learning Sequence	Linked Learning	Home Learning
Number system	Be able to identify the highest common factor and lowest common multiple Be able to identify prime numbers and understand the concept of prime factorisation Be able to round numbers to an appropriate degree of accuracy Be able to interpret standard form	Factor Multiple Prime factor Venn diagram Significant figure Standard form	Solve problems using highest common factor and lowest common multiple Write a number as a product of its prime factors Use prime factorisation to find the highest common factor and lowest common multiple of two numbers Round numbers to a given number of significant figures Use standard form to write small and large numbers	Know the meaning of a prime number Recall prime numbers up to 50 Understand the use of notation for powers Know how to round to the nearest whole number, 10, 100, 1000 and to decimal places Know how to identify the first significant figure in any number Multiply and divide numbers by powers of 10	There will be a written piece of homework each week to reinforce key concepts.
Calculating	Be able to apply the four operations to integers and simple fractions and mixed numbers – all both positive and negative Be able to use conventional notation for priority of operations, including brackets, powers, roots and reciprocals	Directed number Improper fraction Mixed number Power Indices Root	Add, subtract, multiply and divide integers that are both positive and negative Add, subtract, multiply and divide fractions that are both positive and negative Square and cube positive and negative numbers Use a scientific calculator to calculate with negative numbers Use the order of operations for calculations involving powers and roots	Fluently recall and apply multiplication facts up to 12×12 Know the formal written method of long multiplication and division Convert between an improper fraction and a mixed number Know the order of operations for the four operations and brackets	There will be a written piece of homework each week to reinforce key concepts.

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Topic	Learning Objectives	Key Vocabulary	Learning Sequence	Linked Learning	Home Learning
Visualising and constructing	Be able to interpret plans and elevations of 3D shapes Be able to interpret maps and scale drawings and use bearings Be able to describe and construct similar shapes by enlargement, including on coordinate axes	Plan Elevation Bearing Scale drawing Similar Enlarge Scale factor	Identify plans and elevations of 3D shapes Construct scale diagrams and solve geometrical problems involving bearings Find the centre and scale factor of an enlargement Use the centre and scale factor to carry out an enlargement with a positive integer scale factor	Use a protractor to measure angles to the nearest degree Use a ruler to measure lengths to the nearest millimetre Understand coordinates in all four quadrants Work out a multiplier given two numbers	There will be a written piece of homework each week to reinforce key concepts.
Understanding risk	Be able to describe and analyse the frequency of outcomes of probability experiments using tables Be able to construct theoretical possibility spaces for single experiments with equally likely outcomes	Outcome Equally likely Mutually exclusive Exhaustive Possibility space	List all the outcomes for an experiment, including the use of tables Work out theoretical probabilities for events with equally likely outcomes Apply the fact that the sum of probabilities for all outcomes is 1	Understand the equivalence between fractions, decimals and percentages Compare fractions, decimals or percentages	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
Algebraic proficiency	Be able to simplify algebraic expressions Be able to substitute numerical values into scientific formulae Be able to rearrange formulae to change the subject	Product Variable Term Coefficient Common factor Power Indices Formulae Subject	Know and use the zero index Simplify expressions using the law of indices Simplify expressions involving terms with combinations of variables (e.g. $3a^2b + 4ab^2 + 2a^2 - a^2b$) Substitute positive and negative numbers into formulae Change the subject of a formula when one step or two steps are required	Simplify an expression by collecting like terms Substitute positive numbers into expressions and formulae Calculate with negative numbers Understand inverse operations	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
Exploring fractions, decimals and percentages	work interchangeably with terminating decimals and their corresponding fractions (such as 3.5 and 7/2 or 0.375 or 3/8)	Fraction Mixed number Percentage Decimal Proportion Terminating Recurring Simplify Cancel	Identify if a fraction is terminating or recurring Recall some decimal and fraction equivalents (e.g. tenths, fifths, eighths, thirds, quarters, etc.) Write a terminating decimal as a fraction Write a fraction in its lowest terms by cancelling common factors Use a calculator to change any fraction to a decimal	Understand that fractions, decimals and percentages are different ways of representing the same proportion Convert between mixed numbers and top-heavy fractions Write one quantity as a fraction of another	There will be a written piece of homework each week to reinforce key concepts.
Proportional reasoning	express the division of a quantity into two parts as a ratio; apply ratio to real contexts and problems (such as those involving conversion, comparison, scaling, mixing, concentrations) identify and work with fractions in ratio problems understand and use proportion as equality of ratios express a multiplicative relationship between two quantities as a ratio or a fraction use compound units (such as speed, rates of pay, unit pricing) and change freely between compound units in numerical contexts relate ratios to fractions and to linear functions	Ratio Proportion Proportional Multiplier Speed Units Compound unit	Express the division of a quantity into two parts as a ratio Solve problems involving ratio in a real-life context (such as those involving conversion, comparison, mixing) Solve problems involving scaling Find a relevant multiplier in a situation involving proportion Understand the connections between ratios and fractions Understand and use compound units Convert between compound units Solve problems involving speed, rates of pay and unit pricing Relate ratios to fractions and linear functions	Understand and use ratio notation Divide an amount in a given ratio	There will be a written piece of homework each week to reinforce key concepts.

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Topic	Learning Objectives	Key Vocabulary	Learning Sequence	Linked Learning	Home Learning
Pattern sniffing	generate terms of a sequence from either a term-to-term or a position-to-term rule deduce expressions to calculate the nth term of linear sequences	Sequence Linear Term Difference Term-to-term rule Position-to-term rule Ascending/Descending	Generate terms of a sequence from a term-to-term rule Generate terms of a sequence from a position-to-term rule Describe the position-to-term rule of a linear sequence using nth term Use the nth term of a sequence to deduce if a given number is in a sequence	Use a term-to-term rule to generate a sequence Find the term-to-term rule for a sequence Describe a sequence using the term-to-term rule	There will be a written piece of homework each week to reinforce key concepts.

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Topic	Learning Objectives	Key Vocabulary	Learning Sequence	Linked Learning	Home Learning
Investigating angles	understand and use alternate and corresponding angles on parallel lines 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)	Degrees Right angle, acute angle, obtuse angle, reflex angle Vertically opposite Geometry, geometrical Parallel Alternate angles, corresponding angles Interior angle, exterior angle Regular polygon	Solve missing angle problems involving alternate angles Solve missing angle problems involving corresponding angles Use knowledge of alternate and corresponding angles to calculate missing angles in geometrical diagrams Establish the fact that angles in a triangle must total 180° Establish the size of an interior and exterior angle in a regular polygon Solve missing angle problems in polygons	Use angles at a point, angles at a point on a line and vertically opposite angles to calculate missing angles in geometrical diagrams Know that the angles in a triangle total 180°	There will be a written piece of homework each week to reinforce key concepts.
Calculating fractions, decimals and percentages	interpret fractions and percentages as operators work with percentages greater than 100% solve problems involving percentage change, including original value problems, and simple interest including in financial mathematics calculate exactly with fractions	Proper fraction, improper fraction, mixed number Simplify, cancel, lowest terms Percent, percentage Percentage change Original amount Multiplier (Simple) interest Exact	Identify the multiplier for a percentage increase or decrease when the percentage is greater than 100% Use calculators to increase an amount by a percentage greater than 100% and exact calculation with fractions Solve problems involving percentage change Solve original value problems when working with percentages Solve financial problems including simple interest	Apply the four operations to proper fractions, improper fractions and mixed numbers Use calculators to find a percentage of an amount using multiplicative methods Identify the multiplier for a percentage increase or decrease Use calculators to increase (decrease) an amount by a percentage using multiplicative methods Know that percentage change = actual change ÷ original amount	There will be a written piece of homework each week to reinforce key concepts.

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Topic	Learning Objectives	Key Vocabulary	Learning Sequence	Linked Learning	Home Learning
Solving equations and inequalities	solve linear equations with the unknown on both sides of the equation find approximate solutions to linear equations using a graph	Algebraic Unknown Equation Operation Solve Solution Brackets Substitute Graph Point of intersection	Solve linear equations with the unknown on one side when the solution is a negative. Solve linear equations with the unknown on both sides when the solution is a whole number/ fraction. Solve linear equations with the unknown on both sides when the solution is a negative. Solve linear equations with the unknown on both sides when the equation involves brackets Recognise that the point of intersection of two graphs corresponds to the solution of a connected equation	Choose the required inverse operation when solving an equation Solve linear equations by balancing when the solution is a whole number or a fraction	There will be a written piece of homework each week to reinforce key concepts.

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Topic	Learning Objectives	Key Vocabulary	Learning Sequence	Linked Learning	Home Learning
Calculating space	Compare lengths, areas and volumes using ratio notation Calculate perimeters of 2D shapes, including circles Identify and apply circle definitions and properties, including: centre, radius, chord, diameter, circumference Know the formulae: circumference of a circle = $2\pi r = \pi d$, area of a circle = πr^2 Calculate areas of circles and composite shapes Know and apply formulae to calculate volume of right prisms (including cylinders)	Circle Centre Radius, Diameter Chord Circumference Pi (Right) prism Cross-section Cylinder Polygon, polygonal Solid	Know circle definitions and properties, including: centre, radius, chord, diameter, circumference Calculate the circumference of a circle when radius or diameter is given Calculate the perimeter of composite shapes that include sections of a circle Calculate the area of a circle when radius or diameter Calculate the area of composite shapes that include sections of a circle Calculate the volume of a right prism Calculate the volume of a cylinder Compare lengths, areas and volumes using ratio notation	Know how to use formulae to find the area of rectangles, parallelograms, triangles and trapezia Know how to find the area of compound shapes	There will be a written piece of homework each week to reinforce key concepts.

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Topic	Learning Objectives	Key Vocabulary	Learning Sequence	Linked Learning	Home Learning
Algebraic proficiency: visualising	plot graphs of equations that correspond to straight-line graphs in the coordinate plane identify and interpret gradients and intercepts of linear functions graphically recognise, sketch and interpret graphs of linear functions and simple quadratic functions plot and interpret graphs and graphs of non-standard (*piece-wise linear)* functions in real contexts, to find approximate solutions to problems such as simple kinematic problems involving distance and speed	Plot Equation (of a graph) Function Formula Linear Coordinate plane Gradient y-intercept Substitute Quadratic Piece-wise linear Model Kinematic Speed Distance	Know that graphs of functions of the form $y = mx + c$, $x \pm y = c$ and $ax \pm by = c$ are linear Plot graphs of functions of the form $y = mx \pm c$ Plot graphs of functions of the form $ax \pm by = c$ Find the gradient of a straight line on a unit grid Find the y-intercept of a straight line Sketch linear graphs Distinguish between a linear and quadratic graph Plot graphs of quadratic functions of the form $y = x^2 \pm c$ Sketch a simple quadratic graph Plot and interpret graphs of piece-wise linear functions in real contexts Plot and interpret distance-time graphs (speed-time graphs) including approximate solutions to kinematic problems	Use coordinates in all four quadrants Write the equation of a line parallel to the x-axis or the y-axis Draw a line parallel to the x-axis or the y-axis given its equation Identify the lines $y = x$ and $y = -x$ Draw the lines $y = x$ and $y = -x$ Substitute positive and negative numbers into formulae	There will be a written piece of homework each week to reinforce key concepts.

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Topic	Learning Objectives	Key Vocabulary	Learning Sequence	Linked Learning	Home Learning
Understanding risk II	apply systematic listing strategies record describe and analyse the frequency of outcomes of probability experiments using frequency trees enumerate sets and combinations of sets systematically, using tables, grids and Venn diagrams construct theoretical possibility spaces for combined experiments with equally likely outcomes and use these to calculate theoretical probabilities apply ideas of randomness, fairness and equally likely events to calculate expected outcomes of multiple future experiments	Outcome Event Experiment, Combined experiment Frequency tree Set Venn diagram Possibility space, sample space Theoretical probability Random Bias, Fairness Relative frequency	List all elements in a combination of sets using a Venn diagram List outcomes of an event systematically Use a table to list all outcomes of an event Use frequency trees to record outcomes of probability experiments Construct theoretical possibility spaces for combined experiments with equally likely outcomes Calculate probabilities using a possibility space Use theoretical probability and experimental probability to calculate expected outcomes	Convert between fractions, decimals and percentages Understand the use of the 0-1 scale to measure probability Work out theoretical probabilities for events with equally likely outcomes Know how to represent a probability Know that the sum of probabilities for all outcomes is 1	There will be a written piece of homework each week to reinforce key concepts.
Presentation of data	interpret, analyse and compare the distributions of data sets from univariate empirical distributions through appropriate graphical representation involving discrete, continuous and grouped data use and interpret scatter graphs of bivariate data recognise correlation	Categorical data, Discrete data, Continuous data, Grouped data Frequency, Frequency table Histogram Axis, axes Scatter graph Positive and Negative correlation	Construct and interpret a grouped frequency table for continuous data Construct and interpret histograms for grouped data with equal class intervals Plot a scatter diagram of bivariate data Interpret a scatter diagram using understanding of correlation	Know the meaning of discrete data Interpret and construct frequency tables Construct and interpret pictograms, bar charts, pie charts, tables and vertical line charts	There will be a written piece of homework each week to reinforce key concepts.

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Topic	Learning Objectives	Key Vocabulary	Learning Sequence	Linked Learning	Home Learning
Measuring data	interpret, analyse and compare the distributions of data sets from univariate empirical distributions through appropriate measures of central tendency (median, mean, mode and modal class) and spread (range, including consideration of outliers) apply statistics to describe a population	Average Spread Consistency Mean Median Mode Range Statistic Approximate Round Calculate an estimate Frequncy Grouped frequency Midpoint	Find the modal class of set of grouped data Find the class containing the median of a set of data Calculate an estimate of the mean from a grouped frequency table Estimate the range from a grouped frequency table Analyse and compare sets of data, appreciating the limitations of different statistics (mean, median, mode, range) Choose appropriate statistics to describe a set of data	Understand the mean, mode and median as measures of typicality (or location) Find the mean, median, mode and range of a set of data Find the mean, median, mode and range from a frequency table	There will be a written piece of homework each week to reinforce key concepts.