YEAR 8 HALF TERM 1 MATHEMATICS SETS 4-5 LEARNING PROGRAMME

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Topic	Learning Objectives	Key Vocabulary	Learning Sequence	Linked Learning	Home Learning
Number skills	Understand factors multiples and primes Calculate with HCF and LCM Prime factorisation	Multiple Lowest common multiple (LCM) Factor Highest common factor (HCF) Venn diagram Prime number	1) Factors primes and multiples 2) Prime factorisation 3) HCF with Venn 4) LCM with Venn	Properties of numbers Times tables	One written and one retrieval piece on number skills.
Inequalities	Understand the inequality symbol Find integer values Solve inequalities Represent inequalities on number lines	(Linear) inequality Unknown Manipulate Solve Solution set Integer	1) Ordering numbers and using inequality symbols 2) Writing inequalities on number lines 3) Writing inequalities from number lines 4) Solving 1 step inequalities and writing possible solutions 5) Solving 2 step inequalities and writing possible solutions 6) Forming and solving inequalities	Solving equations Number lines Negative numbers	One written and one retrieval piece on inequalities.
Rounding and estimation	Understand rounding Understand significant figures		1) Recap rounding 2) Rounding to decimal places 3) Rounding to significant figures only whole numbers 4) Rounding to significant figures with decimals 5) Rounding to significant figures mixed 6) Estimation	Rounding Place value	One written and one retrieval piece on rounding.

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Topic	Learning Objectives	Key Vocabulary	Learning Sequence	Linked Learning	Home Learning
Pythagoras	To understand Pythagoras theorem Calculate missing sides of a right angled triangle	Hypotenuse Pythagoras' theorem Right angle Square root	1) Exploring right angled triangles 2) Calculating the hypotenuse 3) Calculating the shorter sides 4) Calculating a mixture	Square numbers and roots Area Substitution Rearranging	One written and one retrieval piece on Pythagoras.
Laws of indices	Work with indices Be able to write in index form Understand basic index laws	Power Root Index, Indices Positive , Negative Standard form Inequality	1) Calculating with powers and roots and writing using index notation 2) Basic rules of indices (5 of them) 3) Basic rules of indices (5 of them) 4) Index rules with coefficients and combined laws	Powers and roots Powers of 10	One written and one retrieval piece on laws of indices.
Graphs	Understand basic lines on graphs Plot linear graphs using a variety of methods Understand and use gradients and intercepts	Plot Equation Linear Coordinate (Positive/negative) gradient y-intercept Horizontal Vertical Substitute	1) Horizontal, vertical and variations of y=x 2) Recap plotting from table of values with positive gradients 3) Plotting table of values including negative gradients 4) Investigating gradient and intercepts (Computer lesson) 5) Identifying gradient and y-intercept from equation 6) Plotting using y=mx+c (positive gradients) 7) Identifying gradients and intercepts from a graph 8) Plotting graphs in the form ax+by = c	Substitution	One written and one retrieval piece on graphs.

YEAR 8 HALF TERM 2 MATHEMATICS SETS 4-5 LEARNING PROGRAMME

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Topic	Learning Objectives	Key Vocabulary	Learning Sequence	Linked Learning	Home Learning
Area of shapes and circles		Trapezium Circle, Pi Radius Diameter Chord Circumference Area Arc Tangent	1) Area of basic shapes recap 2) Area of a trapezium 3) Investigating circles including labelling a circle 4) Calculating with circumference 5) Calculating with area		One written and one retrieval piece on area.
Expanding and factorising	Expand and factorise with single brackets Solving a range of equations including those with brackets Solving a range of equations including those with fractions	Product Expand Variable Term Coefficient Common factor Factorise Power Indices Solve	1) Expanding single brackets 2) Expanding more complex single brackets 3) Recap simplifying expressions including with different powers 4) Expanding and simplifying 5) Factorising into a single bracket 6) Factorising more complex expressions 7) Recap solving basic equations 8) Solving 2 step equations including brackets 9) Solving including fractions 10) Algebra test	Simplifying algebra Function machines Inverse operations	One written and one retrieval piece on expanding and factorising.

YEAR 8 HALF TERM 2 MATHEMATICS SETS 4-5 LEARNING PROGRAMME

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Topic	Learning Objectives	Key Vocabulary	Learning Sequence	Linked Learning	Home Learning
Ratio and proportion	To be able to write in ratio format To simplify ratio To solve a variety of ratio problems To solve best buy problems To understand exchange rates	Ratio Proportion Multiplier Unitary method Units	1) Simplifying ratios with different units and writing in the form 1:n where n is a decimal 2) Ratio problems via bar modelling 3) Ratio problems via bar modelling 4) Ratio problems involving algebra 5) Best buys 6) Currency conversions 7) Unit conversions 8) End of unit test	Fractions Measures	One written and one retrieval piece on ratio and proportion.

YEAR 8 HALF TERM 3 MATHEMATICS SETS 4-5 LEARNING PROGRAMME

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Topic	Learning Objectives	Key Vocabulary	Learning Sequence	Linked Learning	Home Learning
Percentages 2	To be able to calculate a percentage of an amount with and without a calculator. To be able to increase/decrease by an amount by a given percentage with and without a calculator To be able to find a percentage change To be bale to calculate simple interest and compound interest and be able to draw comparisions/	Percent Multiplier Increase, decrease Simple interest Compound interest	1) Recap percentages of amounts – all methods 2) Recap increase decrease mental method 3) Percentage increase using a multiplier 4) Percentage decrease using a multiplier 5) Mixture 6) Calculating percentage change 7) Simple interest 8) Compound interest using a table for each year. 9) Simple and compound interest 10) End of unit assessment	Dividing by 100, 10, 5, 4, and 2 mentally Converting interchangeably between fractions, decimals and percentages	One written and one retrieval piece on percentages.
Averages from frequency tables	To find the mean, median, mode and range for a data set To be able to work with the reverse mean To find the mean from an ungrouped frequency table To find the estimated mean from a grouped frequency table To find the mode and median from a grouped/ungrouped frequency table To be able to compare sets of data using measures on central tendency	Continuous data Discrete data Average Spread Mean Median Mode Range Measure	1) Recap all 4 averages 2) Working with reverse mean 3) Problems involving averages 4) Mean from a frequency table 5) Mean from a grouped frequency table 6) Median from both frequency tables 7) Comparing data and describing comparisons 8) End of unit assessment	Know the meaning of discrete and continuous data Interpret and construct frequency tables Understand the mean, mode and median as measures of typicality (or location) Find the mean, median, mode and range of a set of data	One written and one retrieval piece on averages.

YEAR 8 HALF TERM 4 MATHEMATICS SETS 4-5 LEARNING PROGRAMME

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Topic	Learning Objectives	Key Vocabulary	Learning Sequence	Linked Learning	Home Learning
Probability	To be able to calculate simple probabilities To be able to draw a two-way table and use it to find probabilities To find probabilities of independent and dependent events To draw a probability tree and use it to calculate probabilities	Outcome, equally likely outcomes Independent event Dependent event Tree diagrams Theoretical probability Experimental probability Random Bias, unbiased, fair Relative frequency Set	1) Probability recap 2) Probability from two-way tables 3) Probability rules – AND/OR 4) Probability trees basics 5) Calculating probabilities from probability trees 6) Gaining a sound understanding of probability trees 7) End of unit assessment	Add fractions and decimals Multiply fractions and decimals Convert between fractions, decimals and percentages Use frequency trees to record outcomes of probability experiments	One written and one retrieval piece on probability.

YEAR 8 HALF TERM 4 MATHEMATICS SETS 4-5 LEARNING PROGRAMME

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Topic	Learning Objectives	Key Vocabulary	Learning Sequence	Linked Learning	Home Learning
Sequences	To be able to find the term-to-term rule in a sequence and continue the sequence. To be able to fluently find the nth term of ascending and descending linear sequences. Use the nth term of a sequence to deduce if a given number is in a sequence To be able to recognise and use the Fibonacci sequence and generate Fibonacci type sequences including continuing to find the next terms of a Fibonacci sequence To be able to draw the subsequent terms in a picture sequence and calculate the nth term of it. To be able to substitute into a quadratic nth term to generate terms in a quadratic sequence.	Term-to-term rule Position-to-term rule nth term Generate Linear Quadratic	1) Term to term rule and next terms 2) Finding the Nth term 3) Generating from the Nth term 4) Problems with the Nth term 5) Fibonacci including algebraic 6) Picture sequences 7) Generating a sequence from a quadratic nth term 8) End of topic assessment	Substitution of positive numbers into an expression Solve two step equations	One written and one retrieval piece on sequences.

Revision Date: 29 July 2021

YEAR 8 HALF TERM 4 MATHEMATICS SETS 4-5 LEARNING PROGRAMME

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Topic	Learning Objectives	Key Vocabulary	Learning Sequence	Linked Learning	Home Learning
Surface area and volume	To be able to fluently recall area formulae for 2d shapes including circles To be able to calculate areas of compound shapes To be able to calculate the surface area of cuboids, prisms and cylinders To be able to calculate the volume of cylinders and prisms and work with inverse operations and rearranging formulae to calculate missing dimensions. To be able to solve functional area and volume questions.	Trapezium Parallelogram (Right) prism Circumference Cylinder Cross-section Volume Surface area Units	1) Area recap – Trapezium, triangle, parallelogram 2) Area recap – compound and circles 3) Naming and nets of 3D shapes 4) Surface area of a cube and cuboid 5) Surface area of triangular prisms 6) Surface area of cylinders 7) Calculating the volume of a prism 8) Volume of a cylinder 9) Functional skills – mixing the volume and surface area 10) End of unit assessment	Know how to use formulae to find the area of rectangles, parallelograms, triangles and trapezia Know how to find the area of compound shapes Name 3d shapes and properties Recall circle parts and formulae to find the area and circumference of a circle	One written and one retrieval piece on surface area and volume.

YEAR 8 HALF TERM 5 MATHEMATICS SETS 4-5 LEARNING PROGRAMME

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Topic	Learning Objectives	Key Vocabulary	Learning Sequence	Linked Learning	Home Learning
Time series	To be able to plot a scatter graph of bivariate data Interpret a scatter diagram using understanding of correlation and accurately constructing a line of best fit. To calculate with compound measures. To draw and interpret a distance-time graph	Scatter graph Positive correlation Negative correlation Line of best fit Interpolate Extrapolate Trend Units	1) Exploring scatter graphs and correlation 2) Plotting and line of best fit 3) Estimating from scatter graphs 4) Calculating with time 5) Speed distance and time 6) SDT graphs drawing graphs 7) Understanding SDT graphs	Know the meaning of discrete data Interpret and construct frequency tables Construct and interpret pictograms, bar charts, pie charts, tables and vertical line charts Convert between units of time Convert between units of metric measurements Understand how to find the gradient of al line segment	One written and one retrieval piece on time series.
Scale drawing, bearings and measures	To understand the criteria of writing a bearing and to accurately draw/measure bearings To understand how to calculate distances using a scale and produce a scale drawing To convert interchangeably between metric units of measurement To convert the key units of metric measurement to imperial measurements and vice versa	Bearings Scale diagram Clockwise Metric Centi(metre), Centi (litre) Kilo(metre), kilo (gram) Imperial	1) Understanding bearings and calculating return bearings 2) Measuring and drawing bearings 3) Understanding scale (maps, blueprints, and objects) 4) Functional scale drawings activity 5) Imperial measures 6) Metric length 7) Metric mass and volume 8) Converting between including miles and km	Accurately measure angles Understand what metric units of measurement are Understand what imperial units of measurement are	One written and one retrieval piece on scale drawings.

YEAR 8 HALF TERM 6 MATHEMATICS SETS 4-5 LEARNING PROGRAMME

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Topic	Learning Objectives	Key Vocabulary	Learning Sequence	Linked Learning	Home Learning
Properties of shapes and transformations	To be able to list properties of 2d and 3 d shapes To be able to draw accurate plans and elevations of 3d representations. To be able to reflect an object in a given mirror line To be able to translate an object using a vector To be able to rotate an object 90, 180, 270 degrees about a given point To be able to enlarge an object using a positive or fractional scale factor. To be able to describe fully a single	Origin Quadrant Translation Reflection Rotation Transformation Object, Image Congruent, congruence Vector Scale factor	1) Properties of 2D and 3D shapes 2) Plans and elevations 1 3) Plans and elevations 2 4) Drawing reflections 5) Describing reflections 6) Drawing translation 7) Describing translations 8) Drawing rotations 9) Describing rotations 10) Enlargement without a centre	Names of 2D and 3D shapes Understanding of faces, edges vertices, Drawing and measuring to scale Symmetry Understanding of angles (90, 180, 270) Plotting co-ordinates in all 4 quadrants Understanding of horizontal and vertical lines	One written and one retrieval piece on properties of shape.