The Acorns School

Overview plans for academic year 2024-2025 **YEAR 1**

Subject: Maths **Year group/cohort: KS3**

	Knowledge, Understanding and Skills	**Knowledge, Understanding and Skills**	**Assessment**	**Subject specific literacy**	**Cross curricular links**	**Prior Knowledge**
	Composite (Bigger picture)	Components (Key concepts)	What is being assessed, how, and when?	Key Vocabulary	Including Personal Development and SMSC	KS2 Objectives – NC link - KS2 Maths National Curriculum
Autumn Term 1 (8 weeks) **Week 1-3**	Directed Number WRM links – - Y7 Au4 Place Value & Ordering Integers & Decimals - Y7 Sp4 Operations & Equations with Directed Number - Y7 Su3 Developing Number Sense	- Understand place value. - Order positive and negative numbers. - Use four operations on integers including negative numbers. -Use prime factor decomposition. - Understand index notation. - Round numbers to 10, 100 and 1000 etc. - Round numbers to significant figures. - Estimate answers to calculations by rounding to 1 significant figure. - Calculate possible resulting errors using inequality notation a<x≤b.	Formative assessment throughout	Place value – hundreds – tens - ones *(not units)* Add Subtract Multiply Divide *(inc variations of these)* Integer Significant figures Greater than Equal to	Estimating the cost of groceries. Understanding of different cultures approach to place value e.g. Chinese multiplication method Financial literacy Estimation of measurements Cross-curricular – PD, History, Science	- Read, write order and compare numbers to at least 1 million. - Count forwards and backwards with positive and negative numbers. -Identify all factor pairs of a number. - Round any number up to 1 million to the nearest 10, 100, 1000, 10000 and 100000.

	- Y8 Sp6 Number Sense - Y9 Sp1 Numbers			Less than		- Use rounding to check answers
Week 4-6	Analysing and Displaying Data WRM links – - Y8 Su4 The Data Handling Cycle - Y8 Su5 Measures of Location	- Read, construct and interpret bar charts, pictograms, frequency tables and diagrams and line graphs. - Find averages and the range. - Understand misleading graphs.	Formative assessment throughout	Bar charts Pictograms Frequency Tables/ Diagrams Line Graphs Averages Mean Mode Median Range Misleading	Showing trends and sales in businesses. Understanding of data change across time. Cross-curricular – Science, History, PD	- Interpret and construct line graphs and pie charts. -Calculate and interpret the mean as an average.
Week 7	Sequences WRM links – - Y7 Au1 Sequences - Y8 Sp2 Sequences	- Work out terms of an arithmetic sequence. - Find the nth term. -Recognise geometric sequences.	Formative assessment throughout	Arithmetic sequence Nth term Common difference Term number Geometric sequence Constant factor Common ratio	Finance – sequences to analyse investment return Engineering – use of sequences to simulate system behaviour. Art and music – following sequences and predicting patterns.	- Describe linear number sequences. - Express missing number problems.

					Cross-curricular – Art, Science, History, Literacy	
Week 8	Assessment	Summative assessment based on directed number, analysing and displaying data and sequences.				
Autumn Term 2 (7 weeks) **Week 1-2**	Working with Shape WRM links – - Y7 Su1 Constructing, measuring & using geometric notation	- Identify properties of shape. - Find angles in triangles and quadrilaterals. - Use the side/angle properties of isosceles and equilateral triangles. - Show step-by-step deduction when solving problems.	Formative assessment throughout	2D shape names – square – triangle – rectangle – circle – trapezium – parallelogram etc. Quadrilateral Properties Side Triangle Isosceles Equilateral Interior Angle Sum of angles	Construction Joinery Engineering Plumbing Fashion Design Cross-curricular – PE, Science	- Compare and classify geometric shapes based on their properties. - Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles.
Week 3-4	Fractions WRM links – - Y7 Au5 Fraction, decimal & percentage equivalence - Y7 Sp5 Addition &	- Identify equivalent fractions and identify simplest form. - Add and subtract fractions. - Multiply and divide fractions. - Understand basic fraction, decimals and percentages conversions.	Formative assessment throughout	Fraction Equivalent Simplest form Reciprocal Decimal Percentage	Cooking and baking Shopping and discounts Sharing Foods Construction Medicine	- Compare and order fractions. - Identify equivalent fractions (represented visually). - Add and subtract fractions with

	Subtraction of fractions - Y8 Au3 Multiplying and dividing fractions				Cross-curricular – Cookery, PE, Science	the same denominators. - Multiply fractions by whole numbers (supported by diagrams). -Recall some simple equivalences between FDP.
Week 5-6	Equations and Functions WRM links – - Y7 Au2 Understand & use algebraic notation - Y7 Au3 Equality & equivalence - Y8 Sp1 Brackets, equations & inequalities - Y9 Au2 Forming & solving equations	- Select an expression/equation/identity/formula from a list. - Write expressions. - Simplify expressions by collecting like terms. - Multiply two simple algebraic expressions. - Simplify expressions by cancelling. - Use function machines. - Substitute positive and negative numbers into expressions and formulae.	Formative assessment throughout	Expression Equation Identity Formula Simplify Like Terms Algebraic expressions Cancel Substitute	Calculating expenses Managing budgets Calculating loan payments Fitness and health monitoring Computer programming Cross-curricular – Science	- Use simple formulae. - Express missing number problems algebraically.
Week 7	Assessment	Summative assessment based on shape, fractions, equations and functions.				

Spring Term 1 (6 weeks) **Week 1**	Data WRM links – - Y9 Au1 – Straight Line Graphs - Y9 Su3 - Rates	- Collect real life data. - Represent real life data. - Interpret real life graphs including speed, distance and time.	Formative assessment throughout	Data Speed Distance Time Graph Y-axis X-axis	Calculating travel times/ distances. Weather forecasting Quality control Cross-curricular – Science, Literacy	- Complete, read and interpret information in tables. - Solve problems using information in a line graph.
Week 2-4	Percentages WRM links – - Y7 Spr3 – Fractions & Percentages of amounts - Y8 Spr4 – Fractions & Percentages - Y9 Spr2 Using Percentages	- Find percentages of shapes. - Find a percentage of an amount. - Compare two quantities using percentages. - Work with percentages greater than 100%. - Calculate percentage increase and decrease. - Express a change as a percentage.	Formative assessment throughout	Percentage Compare Increase Decrease	Shopping and sales Taxes Service charge Nutrition labels Construction Investment returns Cross-curricular – PD, Cookery, Science	- Recognise the percent symbol and understand it relates to 'number parts per 100'. - Know percentage equivalents of ½, ¼, 1/5, 2/5, 4/5.
Week 5	Constructions WRM links – -Y7 Su1 – Constructing, measuring & using geometric notation - Y9 Au5 – Constructions & Congruency	- Accurately draw triangles. - Accurately draw nets. - Draw plans and elevations of shapes. - Bisect angles and lines.	Formative assessment throughout	Triangles Nets Plans Elevations Bisect Angles Congruent Isosceles Equilateral Scalene	Building Construction Computer graphics Cross-curricular – Art	- Compare and classify triangles based on their properties and sizes and find unknown angles.

Week 6	Assessment	Summative assessment based on data, percentages and constructions.				
Spring Term 2 (5 weeks) **Week 1-2**	Circles WRM links – - Y8 Su2 – Area of trapezia & circles - Y9 Au4 – Three dimensional shapes	- Recognise and label parts of a circle. - Find the circumference and area of circles. - Find surface area and volume of 3d shapes.	Formative assessment throughout	Circle – Centre, Arc, Chord, Tangent, Segment, Sector, Radius, Diameter, Circumference, Area Surface area Volume 3d shape names – sphere, cone, cylinder, cube, cuboid, pyramid, prism	Engineering Architecture Painting a room How much carpet is needed Cross-curricular – Art, Science	- Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius. - Calculate the area of rectangles, triangles and parallelograms. - Calculate estimate and compare volumes of cubes and cuboids using standard units – cm^3, m^3, mm^3, km^3
Week 3-4	Fractions, Decimals and Percentages WRM links – Y7 Au5 – Fraction, decimal &	- Convert between fractions, decimals and percentages. - Compare and order fractions, decimals and percentages including use of inequality signs. - Use recurring decimals.	Formative assessment throughout	Fraction Decimal Percentage Convert Smallest value Largest value Inequality – greater than,	Shopping Money Cooking Carpentry Engineering Construction	- Recall and use equivalences between simple fractions, decimals and percentages.

	percentage equivalence			less, than, equal to Recurring	Cross-curricular – Science, History, Cookery	
Week 5	Assessment	Summative assessment based on circles, fractions, decimals and percentages.				
Summer Term 1 (6 weeks) **Week 1-2**	Ratio WRM links – - Y8 Au1 – Ratio & scale	- Simplify ratio. - Share into a ratio. - Find equivalent ratios. - Calculate missing parts of a ratio when the difference is given. - Solve double ratio problems. - Write a ratio as a linear function.	Formative assessment throughout	Ratio Parts Simplify Share Equivalent Difference Linear function	Map reading Recipes Architecture Photography Hair dye mixing Cross-curricular – Science, Literacy	- Solve problems involving the relative sizes of two quantities.
Week 3	Scales and Drawings WRM links – - Y8 Au2 Multiplicative Change -Y10 Sp1 – Angles & bearings	- Use scales in maps and plans including ratios. - Measure and use bearings.	Formative assessment throughout	Scale Plan Ratio Bearings – Angle, North, East, South, West	Map reading Architecture Navigation Surveying Air traffic control Cross-curricular – History	- Draw given angles and measure them in degrees.
Week 4-5	Probability WRM links – - Y7 Su4 – Sets & probability - Y9 Su4 - Probability	- Use language of probability. - Use the probability scale. - Write probabilities in words, fractions, decimals and percentages. - Calculate probability of events happening using theoretical probability. - Estimate probabilities based on the number of trials.	Formative assessment throughout	Probability Scale Theoretical probability Chance Likelihood Impossible Estimate	Sports outcomes Insurance Traffic signals Medicine Election results Cross-curricular – Science, Literacy, PE, History, Citizenship	
Week 6	Assessment	Summative assessment based on ratio, scales and drawings and probability.				

Summer Term 2 (7 weeks) **Week 1-2**	Transformations WRM links – - Y8 Su3 – Line symmetry & reflection - Y9 Sp5 – Rotation & translation - Y9 Su1 – Enlargement & similarity	-Understand rotational symmetry for 2d shapes. - Describe and transform rotations. - Describe and transform reflections. - Describe and transform translations, including the use of vectors. - Describe and transform enlargements, using a positive integer or fractional scale factor, including from a given point. - Understand the scale factor of an enlargement of a shape as the ratio of the lengths of two corresponding sides. - Understand the effect of enlargement on perimeter of shapes.	Formative assessment throughout	Symmetry Rotation Turn Degrees Transform Reflection Translation Vector Enlargement Scale factor	Art Architecture Navigation Computer graphics Engineering Cross-curricular – Art, IT	- Reflect shapes in the x-axis and know that they have not changed. - Draw and translate simple shapes on the coordinate plane.
Week 3	Linear Graphs WRM links – Y8 Au4 – Working in the Cartesian plane - Y9 Au1 – Straight line graphs	- Substitute numerical values in to algebraic expressions. - Plot linear graphs.	Formative assessment throughout	Linear graphs Gradient Equation Y=mx+c Y/x intercept	Business and marketing Tracking costs Understanding relationships between items Cross-curricular – Science, History	- Describe positions on the full coordinate grid (all four quadrants).
Week 4-5	Proportion WRM links – - Y8 Au4 – Working in the Cartesian plane - Y9 Su2 – Solve ratio &	- Understand direct proportion. - Use the unitary method. - Solve best buy problems/ scale up recipes/ convert currencies etc. - Solve word problems involving direct and inverse proportion.	Formative assessment throughout	Direct proportion Inverse proportion Per Y=kx	Adjusting recipes Map reading Medication dosage Driving distances Photography Currency conversion	- Solve problems involving the relative sizes of 2 quantities.

	proportion problems	- Recognise when values are in direct proportion by reference to the graph form. Use and understand the direct proportion relationship y =kx. - Work with percentages. - Express a multiplicative relationship between two quantities as a ratio or fraction.			Cross-curricular – Science, Cookery, History	
Week 6	Quadratic Graphs WRM links – - Y9 (v3) Su2 – Non-linear graphs	- Draw and interpret quadratic graphs. - Interpret graphs including reciprocal and piece-wise. - Represent inequalities.	Formative assessment throughout	Parabola Vertex x/y intercept Reciprocal Y=a/x Function Inequality	Analysing sports technique Engineering Astrology Cross-curricular – Science	- Describe positions on the full coordinate grid (all four quadrants).
Week 7	Assessment	Summative assessment based on transformations, linear graphs, proportion and quadratic graphs.				

Subject Information including exam board details:

The keystage 3 curriculum follows the scheme of work for the AQA exam board. White Rose Maths and Mathsbox is available to support pupils and non-specialist teachers delivering the curriculum. Teachers' individual knowledge and resources are also utilised. Pupils will be tested at the end of each term to monitor progress. If pupils are identified for under achievement, intervention will be applied to support. Due to the ever-changing cohort pupils will be assessed on their knowledge of each topic and then work from their starting points. Our curriculum is designed to develop fluency in the fundamentals of mathematics, build reasoning skills by following lines of enquiry, making generalisations and justifying conclusions, and encourage application of problem solving in varied, rich and increasingly complex situations.

Careers linked to this subject area:

Education, Engineering, Finance, Banking, Accountancy, Engineering, Economist, Data analysis, Electrical engineer, Meteorologist, Software Developer, Stockbroker, Actuary, Economist, Computer programmer, Architect, Air Traffic Control, Engineer, Researcher

Enrichment Opportunities:

Mathematics teaching staff will look for opportunities to enhance student learning using games, online resources, real-life projects, competitions and maths-specific events/trips or days.