Armfield Academy – Mathematics Department

Year 8 Core Curriculum Overview

This maths scheme of work is structured to build securely on prior learning, with concepts sequenced for progression and depth. Retrieval practice is embedded to strengthen fluency and long-term retention. Teaching is responsive, with assessment informing adaptation to meet learners' needs. All pupils are challenged through high expectations, with scaffolds to ensure inclusivity and access for all. The scheme aims to develop problem-solving, reasoning, and resilience alongside core mathematical skills. In year 8 we have the 'Core' and the 'Support' curriculum, these intertwine and teachers have flexibility and fluidity to push pupils in their charge while embedding fundamental knowledge needed for the rest of KS3.

****Note: Objectives in blue are additional content for extension****

Term 1	
Week	Curriculum Overview
1 2	**Ratio** - Understand ratio - Ratio problems (whole given) - Ratio problems (part given) - Ratio problems (difference given) - Simplify ratios - Express ratios in the form 1:n and n:1 (E) - Compare ratios and fractions - Solve problems with ratio
3 4	**Proportion and Scale** - Direct proportion - Conversion graphs - Convert between currencies - Direct proportion graphs - Similar shapes - Convert metric units - Scale diagrams - Interpret maps using scale and ratios
5 6	**Algebraic Manipulation** - Form algebraic expressions - Identify and use formulae, expressions, identities and equations - Simplify expressions - Use directed number with algebra - Substitution with directed number - Expand a single bracket - Factorise into a single bracket - Expand single brackets and simplify - Expand double brackets of the form (x±a)(x±b) (E) - Factorise quadratic expressions (E) - Expand double brackets (E)
7 8 9	**Coordinates and Graphs** - Coordinates in all four quadrants - Lines parallel to the axes - Table of values - Recognise and use the line y=x - Lines of the form y=mx - Link y=mx to direct proportion (E) - Introduce gradient (y=mx) - Lines with a negative gradient - Lines of the form y=x+c - Lines of the form y=mx+c - Find the midpoint of a line segment (E)

	- Solve problems with coordinates and graphs (E) - Quadratic graphs (E)
10	**Multiply and Divide Fractions**
11	- Divide a fraction by an integer - Multiply a fraction by an integer - Multiply fractions - Understand reciprocals - Divide an integer by a fraction - Divide a fraction by a unit fraction - Divide fractions - Multiply and divide mixed numbers - Multiply and divide algebraic fractions (E)
12	**Symmetry and Reflection** **ASSESSMENT WEEK** - Line symmetry - Rotational symmetry - Reflect a shape in a horizontal or vertical line - Reflect a shape in a diagonal line - Reflect a shape given equation of a line (E) - Describe a reflection (E)
13	**Area Density and Volume (Week 1)** - Name 2-D and 3-D shapes - Area of a 2-D shape - Area of a compound shape - Recognise prisms (including language of edges and vertices) - Volume of cubes and cuboids
14	**Review and Reteach** - Here we allocate a week to reviewing and reteaching in order to reinforce key concepts, address gaps in understanding, and ensure a strong foundation before advancing in the curriculum.
	Term 2
Week	Curriculum Overview
1	**Area Density and Volume (Week 2)** - Convert metric units of mass and capacity - Understand the units of mass/density/volume - Solve problems with density, mass and volume - Area and volume in similar shapes (E)
2	**Equations and Inequalities**
3	- Solve simple 1 and 2-step equations - Solve more complex equations - Solve factional equations - Form and solve equations - Solve equations with unknowns on both sides - Understand and use inequalities - Inequalities on a number line - Solve simple inequalities - Form and solve inequalities - Solve inequalities with unknowns on both sides (E)
4	**Percentages**
5	- Percentage of an amount - Convert between percentages and decimals - Use multipliers to find percentages - Convert between decimals and percentages greater than 1 - Percentage increase using a multiplier - Percentage decrease using a multiplier
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	- Percentage increase and decrease using a multiplier - Express one number as a fraction or a percentage of another (calculator) - Express one number as a fraction or a percentage of another (non-calculator) - Percentage change - Find the original value given a percentage - Choose appropriate methods to solve percentage problems
7	**Indices**
8	- Add and subtract expressions with indices - Multiply and divide expressions with indices - Addition law for indices - Subtraction law for indices - Addition and subtraction laws for indices - Powers of powers (E) - Negative indices (E) - Fractional indices (E)
9	**Standard Form** - Positive and negative powers of 10 - Numbers greater than 1 in standard form - Numbers between 0 and 1 in standard form - Standard form on a calculator
10	**Interpret and Represent Data**
11	**ASSESSMENT WEEK** - Types of data - Outliers and errors - Averages and range - Choose the most appropriate average - Compare distributions using average and the range - Averages from an ungrouped frequency table - Represent and interpret grouped discrete data - Represent and interpret continuous data grouped into equal classes - Mean and mode from a grouped frequency table (E)
	Term 3
Week	Curriculum Overview
1	**Revision and Reteach** - Here we allocate a week to reviewing and reteaching in order to reinforce key concepts, address gaps in understanding, and ensure a strong foundation before advancing in the curriculum.
2	**Angles in Parallel Lines and Polygons**
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4	- Basic angles rules and notation - Angles between parallel lines and a transversal - Alternate and corresponding angles - Alternate, corresponding and co-interior angles - Solve complex problems with angles in parallel lines - Properties of special quadrilaterals and their diagonals - Find sides and angles in special quadrilaterals - Exterior angles of a polygon - Interior angles of a polygon - Interior angles in a regular polygon - Prove simple geometric facts (E)
5	**Tables and Probability**
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7	- Probability vocabulary - The probability scale - Probability of a single event - Use the sum of probabilities being equal to 1 - Probability experiments - Sample spaces for 1 or more events - Probabilities from sample space diagrams - Two-way tables

	- Probabilities from two-way tables - Frequency trees - Probabilities from frequency trees
8	**Circles**
9	- Circle vocabulary - Pi as a ratio - Circumference of a circle - Perimeter of parts of a circle - Area of a circle - Area of parts of a circle - Area and circumference of a circle - Perimeter of compound shapes with circles - Perimeter and area of compound shapes with circles
11	**Graphs and Charts**
12	- Pictograms and bar charts - Vertical line charts - Draw pie charts - Interpret pie charts - Line graphs - Choose the most appropriate graph or chart - Compare distributions using graphs - Misleading graphs and charts
13	**Sequences** **ASSESSMENT WEEK** - Generate and describe a sequence given a rule in words - Generate a sequence given a simple algebraic rule - nth term of a linear sequence - Generate a sequence given a complex algebraic rule (E)
14	**Review and Reteach** - Here we allocate a week to reviewing and reteaching in order to reinforce key concepts, address gaps in understanding, and ensure a strong foundation before advancing in the curriculum.