Armfield Academy – Mathematics Department

Year 10 Higher 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 10 we have the 'Higher' curriculum for pupils aiming to sit the Higher GCSE and the 'Foundation' for pupils aiming to sit the Foundation GCSE. This goes beyond what most students will encounter in their exam papers. It's still on the higher-tier specification, but it tends to be at the very top end of difficulty (often grade 8/9 material). All schemes provide key knowledge needed for their GCSE examinations.

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

Term 1	
Week	Curriculum Overview
1	**Algebraic Manipulation** - Simplify expressions - Laws of indices - Expand a single bracket - Factorise into a single bracket
2	**Equations, Inequalities and Formulae**
3	- Solve equations - Solve fractional equations - Solve equations with unknowns on both sides - Understand inequalities - Solve inequalities - Represent solutions to inequalities using set notation (E) - Change the subject of a simple formula - Change the subject of a known formula - Change the subject of a complex formula - Change the subject where the subject appears more than once (E)
4	**Quadratic Expressions and Equations**
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6	- Expand double brackets - Expand triple brackets - Factorise quadratic expressions - Factorise more complex quadratic expressions (E) - Difference of two squares - Solve quadratic equations equal to 0 - Solve quadratic equations by factorisation - Solve more complex quadratic equations by factorisation (E) - Complete the square - Solve quadratic equations by completing the square (E) - Complete the square with more complex quadratic expressions (E) - Solve quadratic equations using the quadratic formula
7	**Percentages**
8	- Percentage of an amount - Percentage increase and decrease - Repeated percentage change - Express one number as a fraction or a percentage of another - Express a change as a percentage - Find the original value after a percentage change - Simple interest - Compound interest - Choose appropriate methods to solve percentage problems

9	**Ratio and Scale**
10	- Equivalent ratios - Share in a ratio (given total, one part or difference) - Link ratios and fractions - Combine a set of ratios - Share in a ratio (algebraically) - Solve problems with ratio and algebra - Ratios and scales
11	**Working with Fractions**
12	- Add and subtract fractions - Multiply and divide fractions - Solve problems with fractions - Add and subtract algebraic fractions - Multiply algebraic fractions - Divide algebraic fractions - Simplify algebraic fractions - Add and subtract more complex algebraic fractions (E) - Multiply and divide more complex algebraic fractions (E) - Solve equations with algebraic fractions (E)
13	**Non-Calculator Method** **ASSESSMENT WEEK** - Order of operations - Related calculations - Solve multi-step problems - Convert recurring decimals to fractions - Convert more complex recurring decimals to fractions (E)
14	**Straight Line Graphs (Week 1)** - Plot straight line graphs - y = mx + c - Find the equation of a line from a graph - Represent solutions to single inequalities on a graph
Term 2	
Week	Curriculum Overview
1	**Straight Line Graphs (Week 2)** - Represent solutions to multiple inequalities on a graph (E) - Find the midpoint of a line segment - Equation of a straight-line graph given one point and a gradient - Equation of a straight-line graph given two points (E) - Equations of perpendicular lines (E) - Real-life straight-line graphs
2	**Probability**
3	- Find the probability of a single event - Use the property that probabilities sum to 1 - List and count outcomes - Relative frequency - Sample spaces for 1 or more events - Two-way tables and frequency trees - Independent events - Tree diagrams for independent events - Tree diagrams for dependent events - Conditional probability (Tree diagrams) (E)
4	**Rounding and Estimation** - Round to decimal places and significant figures - Estimate answers to calculations - Use of a calculator - Error intervals (including truncation) - Upper and lower bounds

5	**Perimeter Area and Volume**
6	- Perimeter of a 2-D shape - Area of a 2-D shape - Area and circumference of a circle - Arc length and perimeter - Area of a sector - Volume of a prism - Volume of a cylinder - Nets - Surface area of a prism - Surface area of a cylinder
7	**Interpret and Represent Data** - Averages and range - Averages from an ungrouped frequency table - Mean from a grouped frequency table - Averages from a grouped frequency table - Use data to compare distributions - Types of data - Sampling - Capture and recapture - Scatter graphs - Interpolation and extrapolation
8	**Non-Linear Graphs**
9	- Quadratic graphs - Intercepts and roots of quadratic graphs - Turning points - Cubic graphs - Approximate solutions to equations using graphs - Equation of the tangent to a curve - Estimate the area under a curve (E) - Equation of a circle - Equation of a tangent to a circle (E)
10	**Angles**
11	**ASSESSMENT WEEK** - Angles around a point, on a straight line and vertically opposite - Angles in triangles and quadrilaterals - Exterior angles of any polygon - Interior angles of any polygon - Solve problems with angles in polygons - Alternate, corresponding and co-interior angles - Solve problems with angles in parallel lines - Solve problems with angles and algebra - Prove geometric facts (E)
Term 3	
Week	Curriculum Overview
1	**Graphs and Diagrams**
2	- Pie charts - Time-series graphs - Frequency polygons - Stem-and-leaf diagrams - Draw histograms - Interpret histograms - Draw cumulative frequency diagrams - Interpret cumulative frequency diagrams - Box plots - Compare distributions using box plots (E)

3	**Vectors** - Understand and represent vectors - Vector notation - Vectors multiplied by a scalar - Add vectors - Add and subtract vectors - Vector journeys in shapes - Vectors in quadrilaterals - Parallel vectors
4	**Factors Powers and Surds**
5	- Prime factorisation, HCF and LCM - Powers, roots and negative indices - Fractional indices - Four operations with surds - Simplify surds - Expand single brackets with surds - Rationalise the denominator - Expand double brackets with surds - Rationalise the denominator with more complex denominators (E) - Solve problems with surds
6	**Pythagoras and Trigonometry (Week 1)** - Pythagoras' theorem (find any side) - Use trigonometric ratios to find an unknown side length - Use trigonometric ratios to find an unknown angle - Exact trigonometrical values - Trigonometry in 3-D shapes
7	MOCK EXAM PERIOD AND WORK EXPERIENCE
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11	**Pythagoras and Trigonometry (Week 2)** - Area of a non-right-angled triangle - Use the sine rule to find an unknown length - Use the sine rule to find an unknown angle - Use the cosine rule to find an unknown length - Use the cosine rule to find an unknown angle
12	**Simultaneous Equations**
13	- Solve simultaneous equations using graphs - Solve simultaneous equations (no adjustments) - Solve simultaneous equations (adjust one) - Solve simultaneous equations (adjust both) - Solve simultaneous equations by substitution - Solve problems with simultaneous equations - Solve simultaneous equations (one linear, one non-linear) using graphs (E) - Solve simultaneous equations (one linear, one non-linear) by equating expressions (E) - Solve simultaneous equations (one linear, one non-linear) using substitution (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.