# Armfield Academy – Mathematics Department

# Year 10 Foundation Curriculum Overview

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

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. The Foundation Curriculum does have extension objectives that allows pupils to transition between tiers after year 10 and year 11 mock examinations if teacher feel it appropriate. All schemes provide key knowledge needed for their GCSE examinations.

| Term 1 | |
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| Week | Curriculum Overview |
| 1<br>2 | **Algebraic Manipulation**<br>- Substitution<br>- Collect like terms<br>- Simplify expressions<br>- Addition and subtraction laws for indices<br>- Powers of powers<br>- Expand a single bracket<br>- Factorise into a single bracket |
| 3<br>4 | **Equations, Inequalities and Formulae**<br>- Solve equations<br>- Solve fractional equations<br>- Solve equations with unknowns on both sides<br>- Understand inequalities<br>- Solve inequalities<br>- Change the subject of a simple formula<br>- Change the subject of a known formula<br>- Change the subject of a complex formula (E) |
| 5<br>6 | **Quadratic Expressions and Equations**<br>- Expand double brackets<br>- Factorise quadratic expressions (positive only)<br>- Factorise quadratic expressions<br>- Difference of two squares (E)<br>- Solve quadratic equations equal to 0<br>- Solve quadratic equations by factorisation<br>- Quadratic graphs of the form y=x2 + a |
| 7<br>8 | **Percentages**<br>- Percentage of an amount<br>- Percentage increase and decrease<br>- Repeated percentage change (E)<br>- Express one number as a fraction or a percentage of another<br>- Express a change as a percentage<br>- Find the original value after a percentage change<br>- Simple interest<br>- Compound interest (E)<br>- Choose appropriate methods to solve percentage problems |
| 9<br>10 | **Ratio and Scale**<br>- Equivalent ratios<br>- Share in a ratio (total given) |

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| | - Share in a ratio (part or difference given)<br>- Link ratios and fractions<br>- Combine a set of ratios (E)<br>- Share in a ratio (algebraically) (E)<br>- Ratios and scales |
| 11 | **Working with Fractions**<br><br>- Fraction of an amount<br>- Increase or decrease an amount by a fraction<br>- Use a fraction to find the whole<br>- Equivalent fractions and mixed numbers<br>- Add and subtract fractions<br>- Multiply fractions |
| 12 | - Divide fractions<br>- Solve problems with fractions |
| 13 | **Non-Calculator Method** |
| 14 | **ASSESSMENT WEEK**<br><br>- Place value for integers and decimals<br>- Compare and order numbers<br>- Add and subtract integers and decimals<br>- Multiply and divide integers and decimals<br>- Four operations with directed number<br>- Order of operations<br>- Related calculations<br>- Solve multi-step problems |
| | **Term 2** |
| Week | Curriculum Overview |
| 1 | **Straight Line Graphs** |
| 2 | - Plot straight line graphs<br>- Find solutions to equations using straight line graphs<br>- Explore gradients<br>- y = mx + c<br>- Find the equation of a line from a graph (E)<br>- Find the midpoint of a line segment<br>- Equation of a straight-line graph given one point and a gradient<br>- Equation of a straight-line graph given two points (E)<br>- Real-life straight-line graphs (E) |
| 3 | **Probability** |
| 4 | - Find the probability of a single event<br>- se the property that probabilities sum to 1<br>- List outcomes<br>- Relative frequency<br>- Sample spaces for 1 or more events<br>- Two-way tables<br>- Frequency trees<br>- Independent events<br>- Tree diagrams for independent events<br>- Tree diagrams for dependent events (E) |
| 5 | **Rounding and Estimation**<br><br>- Round to decimal places<br>- Round to significant figures<br>- Estimate answers to calculations<br>- Use of a calculator<br>- Error intervals (including truncation) (E) |

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| 6 | **Perimeter Area and Volume** |
| 7 | - Name 2-D and 3-D shapes<br>- Perimeter of a 2-D shape<br>- Area of a compound shape<br>- Recognise and label parts of a circle<br>- Circumference of a circle<br>- Area of a circle<br>- Volume of a prism<br>- Nets<br>- Surface area of a prism |
| 8 | **Interpret and Represent Data** |
| 9 | - Averages and range<br>- Averages from an ungrouped frequency table<br>- Mean from a grouped frequency table<br>- Averages from a grouped frequency table<br>- Use data to compare distributions (E)<br>- Types of data<br>- Sampling<br>- Scatter graphs<br>- Interpolation and extrapolation (E) |
| 10 | **Non-Linear Graphs**<br><br>**ASSESSMENT WEEK**<br><br>- Quadratic graphs<br>- Intercepts and roots of quadratic graphs (E)<br>- Cubic graphs<br>- Approximate solutions to equations using graphs (E) |
| 11 | **Angles (Week 1)**<br><br>- Angles around a point, on a straight line and vertically opposite<br>- Angles in a triangle<br>- Angles in a quadrilateral<br>- Exterior angles of a polygon |
| | **Term 3** |
| Week | Curriculum Overview |
| 1 | **Angles (Week 1)**<br><br>- Interior angles of a polygon<br>- Solve problems with angles in polygons (E)<br>- Alternate and corresponding angles<br>- Alternate, corresponding and co-interior angles<br>- Prove geometric facts (E) |
| 2 | **Graphs and Diagrams**<br><br>- Pictograms<br>- Line and bar charts<br>- Dual and composite bar charts<br>- Draw pie charts<br>- Interpret pie charts<br>- Time-series graphs<br>- Frequency polygons<br>- Stem-and-leaf diagrams |
| 3 | **Vectors**<br><br>- Understand and represent vectors<br>- Vector notation<br>- Translate by a vector<br>- Vectors multiplied by a scalar<br>- Add vectors<br>- Add and subtract vectors<br>- Solve problems with vectors (E) |

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| 4<br>5 | **Factors and Powers**<br><br>- Factors, multiples and primes<br>- Prime factorisation<br>- HCF and LCM<br>- Square and cube numbers<br>- Powers and roots<br>- Negative indices<br>- Irrational numbers and surds<br>- Simplify expressions with surds (E)<br>- Expand brackets with surds (E) |
| 6 | **Pythagoras and Trigonometry (Week 1)**<br><br>- Pythagoras' theorem (find the hypotenuse)<br>- Pythagoras' theorem (find any side)<br>- Identify hypotenuse, opposite and adjacent sides<br>- Ratios in right-angled triangles |
| 7<br>8<br>9<br>10 | MOCK EXAM PERIOD AND WORK EXPERIENCE |
| 11 | **Pythagoras and Trigonometry (Week 2)**<br><br>- Use the tangent ratio to find an unknown side length<br>- Use the sine and cosine ratio to find an unknown side length<br>- Use trigonometric ratios to find an unknown side length<br>- Use trigonometric ratios to find an unknown angle<br>- Exact trigonometric values (E) |
| 12<br>13 | **Simultaneous Equations**<br><br>- Use one value to find another<br>- Introduction to simultaneous equations<br>- Solve simultaneous equations using graphs<br>- Solve simultaneous equations (no adjustments)<br>- Manipulating equations<br>- Solve simultaneous equations (adjust one)<br>- Solve simultaneous equations (adjust both) (E)<br>- Solve simultaneous equations by substitution (E) |
| 14 | **Review and Reteach**<br><br>- 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. |