ORCHARD MEAD ACADEMY

Year 10 Maths Learning Map

- TERM 1 -

Collect, Process and Represent Data
Year 10 students will collect and represent data using bar charts, pie charts, frequency tables, and grouped data. They will analyse scatter diagrams with lines of best fit, interpolating, extrapolating, and assessing correlations, while critically evaluating methods, sampling, and potential misrepresentations.

Place Value, Ordering and Rounding
Students will consolidate understanding of very large and very small numbers, rounding to significant figures and decimal places. They will refine estimation skills and apply standard form to calculations in measures, money, and scientific contexts, strengthening precision and problem-solving.

Types of Number
Students will confidently work with indices, including negative and fractional powers, applying the laws of indices to simplify expressions. They will use prime factorisation to find HCFs and LCMs and apply number properties to solve complex numerical and algebraic problems.

Algebraic notations and expressions
Students will extend algebraic manipulation, factorising, expanding, simplifying, and collecting like terms. They will substitute into formulae, rearrange equations, solve linear and quadratic equations and inequalities, and begin exploring sequences, nth-term expressions, and applied algebraic problem-solving.

Nets, Plans and Elevations
Students finish Term 1 by interpret and drawing 3D representations, including plans, elevations, and nets of solids.

PRIOR LEARNING

The start of KS4 builds directly on prior learning from KS2 and KS3. Pupils extend KS2 foundations in data handling, number, and basic algebra, and Year 7–8 skills in place value, rounding, indices, factors, multiples, algebraic manipulation, sequences, and 3D shapes. The content strengthens reasoning, problem-solving, and formal mathematical communication, connecting earlier work with more complex representations, formulae, and statistical interpretations.

- TERM 2 -

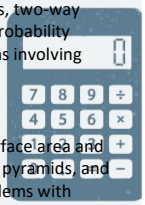
Equations, Inequalities & Formula.
Students revisit and become more confident in solving linear equations and inequalities, including those with unknowns on both sides, rearrange and substitute into formulae, represent solutions on number lines, and apply algebra to solve contextual and real-world problems.

Quadratic Expressions and Equations
Year 10 students will extend their knowledge of algebra to expand, factorise, and simplify quadratic expressions, solve quadratic equations by factorising, use the difference of squares, apply formulae, and interpret solutions in contextual problems, extending algebraic problem-solving skills.

Ratio and Scale
They will learn to solve problems involving direct and inverse proportion, work with compound measures, scale factors, and best-buy comparisons, apply ratio reasoning in tables, graphs, and diagrams, and solve real-world proportional and scaling problems.

Straight Line Graphs
students plot and interpret linear graphs, use and compare equations in the form $y = mx + c$, calculate and interpret gradients and intercepts, find equations from graphs, and apply these skills to solve real-world problems in a variety of contexts.

Probability
Students calculate probabilities from theoretical and experimental data and understand the difference between them. They will work with independent and dependent events, two-way tables, and Venn diagrams, apply probability rules, and solve real-world problems involving chance and risk



Perimeter, Area and Volume
Year 10 students determine the surface area and volume of prisms, cylinders, cones, pyramids, and spheres, and solve contextual problems with metric conversions

PRIOR LEARNING

Term 2 of year 10 builds on KS2 foundations in number, fractions, decimals, and basic algebra, and KS3 skills in equations, inequalities, ratio, graphs, and probability, extending students' problem-solving, reasoning, and application of algebra and proportionality to real-world contexts.

- TERM 3 -

Non-Linear Graphs
They will learn to plot and interpret quadratic, cubic, reciprocal, and other non-linear graphs, explore their features, identify roots and turning points, and use graphs to solve equations and model real-world situations.

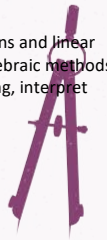
Angles
Students will use angle facts to find missing angles in parallel lines, polygons, and at points and vertices. They will apply angle rules in triangles and quadrilaterals, and use reasoning to solve problems in geometric diagrams and real-world contexts

Vectors
They will advance on their understanding of 2D vectors by using column notation, perform addition, subtraction, and scalar multiplication, use vectors to describe geometric translations. Furthermore. They will solve problems involving position, displacement, and geometric reasoning.

Factors and Powers
Further developing from Term 1 – Students will apply the laws of indices, perform prime factorisation, calculate highest common factors and lowest common multiples and use these skills to simplify expressions and solve number problems.

Pythagoras and Trigonometry
They will apply Pythagoras' theorem in 2D and 3D contexts, use sine, cosine, and tangent ratios to calculate unknown sides and angles in right-angled triangles, and solve real-world problems involving distances and heights.

Simultaneous Equations
Students solve pairs of linear equations and linear and quadratic equations by using algebraic methods, substitution, elimination, and graphing, interpret solutions where lines intersect



PRIOR LEARNING

These Year 10 topics build on KS2 and KS3 knowledge in number, algebra, and geometry. Students extend prior learning in area, volume, angles, vectors, powers, and graphs, developing problem-solving, reasoning, and real-world applications in increasingly complex 2D and 3D contexts.