

Mathematics Learning Journey

GCSE Foundation

Unit 20 More Algebra

- Rearrange formulae
- Solve simultaneous equations
- Cubic graphs
- Reciprocal graphs

Revision and Exam Papers

Unit 19 Congruence, Similarity and Vectors

- Enlargement and similarity
- Similar shapes
- Congruent shapes
- Column Vectors

Unit 18 Fractions, indices & Standard Form

- Zero and negative indices
- Reciprocals
- Fraction review – four operations
- Standard form

Unit 17 – Perimeter, Area and Volume 2

- Circumference of a circle
- Area of a circle
- Area and circumference
- Pyramids and cones
- Spheres
- Composite shapes
- Cylinders

Unit 14 Multiplicative Reasoning

- Percentages - Reverse
- Percentage change
- Best value
- Rates of pay
- Compound interest
- Growth and decay
- Proportionality – it takes four people 4 hours.....

Unit 15 Constructions, Loci and Bearings

- Scale Drawings, 3D Solids, Accurate Drawings
- Construction and Loci
- Bearings – Measuring and drawing

Unit 16 Quadratic Equations and Graphs

- Multiply out pairs of brackets positives
- Multiply out pairs of brackets negatives
- Factorise a quadratic positives
- Factorise a quadratic negatives
- Drawing Quadratics
- Solving Quadratics

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Unit 13 Probability

- Calculating Probability
- Two Events
- Experimental Probability
- Venn Diagrams
- Tree Diagrams

Unit 12 Right angled triangles

- Pythagoras theorem
- Pythagoras problems
- Pythagoras – length of line segment
- Trigonometry – unknown on top
- Trigonometry – missing angles

Unit 11 Ratio and proportion

- Simplify ratios. Ratio n:1, 1:n. Ratio to fractions
- Division in a ratio
- Division in a ratio – worded and working backwards
- Best value
- Recipes
- Proportion and graphs
- Ratio problems e.g with fractions and percentages

Unit 7 Averages and range

- Averages revision (Mean, median, mode and range)
- Averages from a stem and leaf diagram
- Averages from a frequency table
- Averages from a grouped frequency table
- Sampling/bias/advantages of different types of average

Unit 8 Perimeter, Area & Volume 1

- Area and perimeter – rectangles, parallelograms and triangles
- Area calculations e.g tiling, paving etc
- Area and perimeter of trapezia
- Compound areas
- Nets of cuboids and surface area of cuboids
- Surface area of triangular prisms
- Volume of cuboids and prisms.
- Units – capacity (ml, litres, cc)

Unit 9 Graphs

- Function machines (including inverse)
- Coordinates and finding the midpoint
- Straight line graphs from tables of values
- Finding the gradient
- $y = mx + c$ gradients and intercepts.
- Sketching graphs
- Real life graphs
- Draw Distance time graphs
- Interpret Distance time graphs

Unit 10 Transformations

- Translate shapes
- Reflect shapes
- Rotate shapes
- Enlarge shapes
- Describe transformations
- Combinations of transformations

Unit 6 Angles

- Properties of shapes, congruency and symmetry
- Angles revision - on a straight line, at a point etc
- Angles in a triangle - isosceles, opposite angles
- Angles on parallel lines
- Angles in a quadrilateral, in polygons (interior and exterior)
- Solving equations from angle problems/equal side lengths

Unit 4 Fractions and percentage

- Equivalent fractions. Compare fractions
- Add and subtract fractions
- Convert mixed to improper fractions. Simplify fractions
- Add and subtract mixed fractions
- Fractions of an amount
- Multiply and divide mixed fractions
- Convert fractions to decimals
- One number as a fraction of another.
- Convert percentages to fracs
- One number as a percentage of another.
- Find a percentage of an amount
- Increase and decrease by a percentage
- Interest, VAT, real life percentage problems

Unit 2 Algebra

- Laws of indices
- Simplify expressions - add, subtract, multiply, divide
- Expand single brackets
- Expand 2 brackets and simplify
- Factorise expressions
- Substitute into expressions
- Write formulae and substitute into real life formulae

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Unit 5 Equations, Inequalities and sequences

- Solve equations – one and two step
- Solve equations with brackets
- Solve equations with unknowns on both sides
- Solve equations with brackets and unknowns on both sides
- Inequalities on a number line
- Solving inequalities
- Sequences – counting on and inverse operations
- Nth term of a sequence
- Finding terms given nth term

Unit 3 Interpreting and representing data

- Data collection (tallies) and 2 way tables
- Bar charts including composite and comparative
- Time series graphs and line graphs
- Stem and leaf diagrams
- Pie charts
- Scatter graphs
- Lines of best fit

Unit 1 Number

- Addition and subtraction – worded questions
- Long multiplication and division
- Place value – ordering decimals, negative numbers
- Order of operations
- Negative numbers - add and subtract
- Negative numbers - multiply and divide
- Rounding - decimal places and significant figures
- Estimation
- Multiples and LCM
- Factors and HCF
- Product of prime factors
- Squares, cubes & roots. Powers of 2,3,4,5.