

KEY STAGE 3 Programme of Study

Year 7, 8 and 9

Year 7 Half Term 1

- **Unit 1: Algebra 1**

- ❖ Sequences and rules
- ❖ Finding missing terms
- ❖ Finding the general term (n^{th} term)
- ❖ Functions and mappings
- ❖ Using letter symbols to represent functions
- ❖ A function investigation
- ❖ National Test questions
- ❖ Functional Maths – Valencia Planetarium

Year 7 Half Term 1

- **Unit 2: Number 1**

- ❖ Decimals
- ❖ Ordering decimals
- ❖ Directed numbers
- ❖ Estimates
- ❖ Column method for addition, subtraction and multiplication
- ❖ Solving problems
- ❖ National Test questions

Year 7 Half Term 1

- **Unit 3: Geometry and Measures 1**
 - ❖ Length, perimeter and area
 - ❖ Areas of some 2-D shapes
 - ❖ 3-D shapes
 - ❖ Surface area and volume of cuboids
 - ❖ National Test Questions
 - ❖ Functional Maths – Design a bedroom

Year 7 Half Term 2

- **Unit 4: Number 2**
 - ❖ Fractions
 - ❖ Fractions and decimals
 - ❖ Adding and subtracting fractions
 - ❖ Calculations and equivalences
 - ❖ Solving problems
 - ❖ National test questions

Year 7 Half Term 2

- **Unit 5: Statistics 1**

- ❖ Mode, median and range
- ❖ The mean
- ❖ Statistical diagrams
- ❖ Probability
- ❖ Experimental probability
- ❖ National Test Questions
- ❖ Functional Maths – School sports day

Year 7 Half Term 2

- **Unit 6: Algebra 2**

- ❖ Algebraic terms and expressions
- ❖ Rules of algebra
- ❖ Expanding and simplifying expressions
- ❖ Formulae
- ❖ Equations
- ❖ National Test Questions
- ❖ Functional Maths – Skiing trip

Year 7 Half Term 3

- **Unit 7: Geometry and Measures 2**
 - ❖ Lines and angles
 - ❖ Calculating angles
 - ❖ Coordinates
 - ❖ National Test Questions

Year 7 Half Term 3

- **Unit 8: Statistics 2**

- ❖ Using a tally chart
- ❖ Using the correct data
- ❖ Grouped frequencies
- ❖ Data collection
- ❖ National Test questions
- ❖ Functional Maths – Be a school chef for a day

Year 7 Half Term 3

- **Unit 9: Numbers and Measures 3**

- ❖ Rounding
- ❖ The four operations
- ❖ BODMAS
- ❖ Long multiplication and long division
- ❖ Efficient calculations
- ❖ Calculating with measurements
- ❖ Solving problems
- ❖ National Test Questions
- ❖ Functional Maths – What's your carbon footprint

Year 7 Half Term 4

- **Unit 10: Algebra 3**

- ❖ Square numbers and square roots
- ❖ Triangle numbers
- ❖ From mappings to graphs
- ❖ More about graphs
- ❖ Questions about graphs
- ❖ National Test Questions

Year 7 Half Term 4

- **Unit 11: Geometry and Measures 3**
 - ❖ Measuring and drawing angles
 - ❖ Constructions
 - ❖ Solving geometrical problems
 - ❖ National Test Questions

Year 7 Half Term 4

- **Unit 12: Number 4**

- ❖ Percentages
- ❖ Ratio and proportion
- ❖ Calculating ratios and proportions
- ❖ Solving problems
- ❖ National Test Questions
- ❖ Functional Maths – Smoothie bar

Year 7 Half Term 5

- **Unit 13: Algebra 4**

- ❖ Solving 'brick wall' problems
- ❖ Square-and-circle problems
- ❖ Triangle-and-circle problems
- ❖ National Test questions
- ❖ Functional Maths – Child trust fund

Year 7 Half Term 5

- **Unit 14: Geometry and Measures 4**
 - ❖ Line symmetry and rotational symmetry
 - ❖ Reflections
 - ❖ Rotations
 - ❖ Translations
 - ❖ Enlargements
 - ❖ National Test questions
 - ❖ Functional Maths – Landmark spotting

Year 7 Half Term 5

- **Unit 15: Statistics 3**

- ❖ Pie charts
- ❖ Comparing data
- ❖ Statistical surveys
- ❖ Comparing experimental and theoretical probabilities
- ❖ National Test questions

Year 7 Half Term 6

- **Unit 16: Number 5**

- ❖ Multiplying decimals
- ❖ Dividing decimals
- ❖ Using a calculator
- ❖ Fractions of quantities
- ❖ Solving problems
- ❖ National Test questions
- ❖ Functional Maths – Running a small business

Year 7 Half Term 6

- **Unit 17: Algebra 5**

- ❖ Solving equations
- ❖ Formulae
- ❖ Dotty investigations
- ❖ Graphs from the real world
- ❖ Other types of problem
- ❖ National Test questions

Year 7 Half Term 6

- **Unit 18: Geometry and Measures 5**
 - ❖ Polygons
 - ❖ Tessellations
 - ❖ Constructing 3-D shapes
 - ❖ National Test questions

Year 8 Half Term 1

- **Unit 1: Algebra 1**

- ❖ Multiplying and dividing negative numbers
- ❖ HCF and LCM
- ❖ Powers and roots
- ❖ Prime factors
- ❖ Sequences 1
- ❖ Sequences 2
- ❖ Solving problems
- ❖ National Test Questions
- ❖ Functional Maths – Blackpool Tower

Year 8 Half Term 1

- **Unit 2: Geometry and Measures 1**
 - ❖ Alternate and corresponding angles
 - ❖ Interior and exterior angles of polygons
 - ❖ Geometric proof
 - ❖ The geometric properties of quadrilaterals
 - ❖ Constructions
 - ❖ National Test questions

Year 8 Half Term 1

- **Unit 3: Statistics 1**

- ❖ Probability
- ❖ Probability scales
- ❖ Mutually exclusive events
- ❖ Calculating probabilities
- ❖ Experimental probability
- ❖ National Test questions
- ❖ Functional Maths – Fun in the fairground

Year 8 Half Term 2

- **Unit 4: Number 2**

- ❖ Fractions and decimals
- ❖ Adding and subtracting fractions
- ❖ Multiplying and dividing fractions
- ❖ Percentages
- ❖ Percentages increase and decrease
- ❖ Real-life problems
- ❖ National Test questions
- ❖ Functional Maths – Going on holiday

Year 8 Half Term 2

- **Unit 5: Algebra 2**
 - ❖ Algebraic shorthand
 - ❖ Like terms
 - ❖ Expanding brackets and factorising
 - ❖ Using algebra with shapes
 - ❖ Index notation with algebra
 - ❖ National Test questions

Year 8 Half Term 2

- **Unit 6: Geometry and Measures 2**
 - ❖ The circle
 - ❖ Circumference of a circle
 - ❖ Area of a circle
 - ❖ Surface area and volume of prisms
 - ❖ Imperial units
 - ❖ National Test questions

Year 8 Half Term 3

- **Unit 7: Algebra 3**

- ❖ Linear functions
- ❖ Finding a function from inputs and outputs
- ❖ Graphs of functions
- ❖ Gradient of a straight line
- ❖ Real-life graphs
- ❖ National Test questions
- ❖ Functional Maths – M25

Year 8 Half Term 3

- **Unit 8: Number 3**

- ❖ Powers of 10
- ❖ Large numbers
- ❖ Estimations
- ❖ Working with decimals
- ❖ Efficient calculations
- ❖ Multiplying and dividing decimals
- ❖ National Test questions
- ❖ Functional Maths – Taxes

Year 8 Half Term 3

- **Unit 9: Geometry and Measures 3**
 - ❖ Congruent shapes
 - ❖ Combinations of transformations
 - ❖ Enlargements
 - ❖ Planes of symmetry
 - ❖ Shape and ratio
 - ❖ National Test questions

Year 8 Half Term 4

- **Unit 10: Algebra 4**

- ❖ Solving equations
- ❖ Equations involving negative numbers
- ❖ Equations with unknowns on both sides
- ❖ Substituting into expressions
- ❖ Substituting into formulae
- ❖ Creating your expressions and formulae
- ❖ National Test questions

Year 8 Half Term 4

- **Unit 11: Statistics 2**

- ❖ Statistical surveys
- ❖ Stem-and-leaf diagrams
- ❖ Interpreting graphs and diagrams
- ❖ Scatter graphs
- ❖ Analysing data
- ❖ National Test questions
- ❖ Functional Maths – Football attendances

Year 8 Half Term 4

- **Unit 12: Number 4**

- ❖ Fractions
- ❖ Adding and subtracting fractions
- ❖ Order of operations
- ❖ Multiplying decimals
- ❖ Dividing decimals
- ❖ National Test questions
- ❖ Functional Maths – Shopping for bargains

Year 8 Half Term 5

- **Unit 13: Algebra 5**

- ❖ Expand and simplify
- ❖ Solving equations by trial and improvement
- ❖ Constructing equations
- ❖ Problems with graphs
- ❖ Real-life graphs
- ❖ Change of subject
- ❖ National Test questions
- ❖ Functional Maths – Train timetable

Year 8 Half Term 5

- **Unit 14: Solving problems**

- ❖ Number and measures
- ❖ Using algebra, graphs and diagrams to solve problems
- ❖ Logic and proof
- ❖ Proportion
- ❖ Ratio
- ❖ National Test questions

Year 8 Half Term 5

- **Unit 15: Geometry and Measures 4**
 - ❖ Plans and elevations
 - ❖ Scale drawings
 - ❖ Finding the mid-point of a line segment
 - ❖ Map scales
 - ❖ Loci
 - ❖ Bearings
 - ❖ A cube investigation
 - ❖ National Test questions
 - ❖ Functional Maths - Photographs

Year 8 Half Term 5

- **Unit 16: Statistics 3**

- ❖ Collecting data for frequency tables
- ❖ Assumed mean and working with statistics
- ❖ Drawing frequency diagrams
- ❖ Comparing data
- ❖ Comparing sets of data
- ❖ Experimental and theoretical probability
- ❖ National Test questions
- ❖ Functional Maths - Questionnaire

Year 9 Half Term 1

- **Unit 1: Algebra 1 & 2**

- ❖ Sequences
- ❖ Quadratic Sequences
- ❖ Functions
- ❖ Graphs
- ❖ Limits of sequences
- ❖ National Test questions
- ❖ Functional Maths – Mobile phone tariffs

Year 9 Half Term 1

● Unit 2: Number 1

- ❖ The four rules governing fractions
- ❖ Percentages and compound interest
- ❖ Reverse percentages and percentage change
- ❖ Direct and inverse proportion
- ❖ Ratio in area and volume
- ❖ Numbers between 0 and 1
- ❖ Reciprocal of a number
- ❖ Rounding and estimation
- ❖ National Test questions
- ❖ Functional Maths – The London Olympics 2012

Year 9 Half Term 1

- **Unit 3: Algebra 1**

- ❖ Equations, formulae and identities
- ❖ Simultaneous equations
- ❖ Solving by substitution
- ❖ Equations involving fraction
- ❖ Inequalities
- ❖ Graphs showing direct proportion
- ❖ Solving simultaneous equations by graphs
- ❖ National Test questions

Year 9 Half Term 2

- **Unit 4: Geometry and Measures 1**

- ❖ Pythagoras' theorem
- ❖ Solving problems using Pythagoras' theorem
- ❖ Loci
- ❖ Congruent triangles
- ❖ Circle theorems
- ❖ Tessellations and regular polygons
- ❖ National Test questions
- ❖ Functional Maths – Garden design

Year 9 Half Term 2

● Unit 5: Statistics 1

- ❖ Scatter graphs and correlation
- ❖ Scatter graphs and lines of best fit
- ❖ Time series graphs
- ❖ Two-way tables
- ❖ Cumulative frequency diagrams
- ❖ Estimation of a mean from grouped data
- ❖ Statistical investigations
- ❖ National Test questions
- ❖ Functional Maths – Rainforest deforestation

Year 9 Half Term 2

- **Unit 6: Geometry and Measures 2**

- ❖ Similar triangles
- ❖ Metric units for area and volume
- ❖ Length of an arc and area of a sector
- ❖ Volume of a cylinder
- ❖ Rate of change
- ❖ National Test questions
- ❖ Functional Maths – Athletics stadium

Year 9 Half Term 3

● Unit 7: Number 2

- ❖ Standard form
- ❖ Multiplying with numbers in standard form
- ❖ Dividing with numbers in standard form
- ❖ Upper and lower bounds 1
- ❖ Upper and lower bounds 2
- ❖ Recurring decimals
- ❖ Efficient use of calculators
- ❖ National Test questions
- ❖ Functional Maths – Paper

Year 9 Half Term 3

● Unit 8: Algebra 4

- ❖ Index notation with algebra – negative powers
- ❖ Square roots, cube roots and other fractional powers
- ❖ Quadratic graphs
- ❖ Cubic graphs
- ❖ National Test questions
- ❖ Functional Maths – Packages

Year 9 Half Term 3

● Unit 9: Statistics 2

- ❖ Probability statements
- ❖ Mutually exclusive events and exhaustive events
- ❖ Combining probabilities and tree diagrams
- ❖ Estimates of probability
- ❖ National Test questions
- ❖ Functional Maths – Class test

Year 9 Half Term 4

- **Unit 10: Geometry and Measures 3**

- ❖ Fractional enlargements
- ❖ Trigonometry – the tangent of an angle
- ❖ Trigonometry – The sine and cosine of an angle
- ❖ Solving and problems using trigonometry
- ❖ National Test questions
- ❖ Functional Maths – Map reading

Year 9 Half Term 4

● Unit 11: Algebra 5

- ❖ Expansion
- ❖ Factorisation
- ❖ Quadratic expansion
- ❖ Quadratic factorisation
- ❖ Change of subject
- ❖ Graphs from equations in the form $Ay \pm Bx = C$
- ❖ National Test questions
- ❖ Functional Maths – Trip to Rome

Year 9 Half Term 4

- **Unit 12: Solving problems and Revision**
 - ❖ Number 1 – Fractions, percentages and decimals
 - ❖ Number 2 – The first four rules, ratios and standard form
 - ❖ Algebra 1 – Rules of algebra and solving equations
 - ❖ Algebra 2 – Graphs
 - ❖ Geometry and measures
 - ❖ Statistics

Year 9 Half Term 5

- **Unit 13: Statistics 3 and Revision**
 - ❖ Statistical techniques
 - ❖ A handling data project

Year 9 Half Term 5

- Unit 14: Geometry and Measures 4 and Revision
 - ❖ Geometry and measures revision
 - ❖ Geometry and measures investigation
 - ❖ Symmetry revision
 - ❖ Symmetry investigations

Year 9 Half Term 5

- **Unit 15: Statistics 4 and Revision**
 - ❖ Revision of probability
 - ❖ A probability investigation

Year 9 Half Term 6

- **Unit 16: GCSE Preparation**
 - ❖ Solving quadratic equations
 - ❖ Quadratic equations of the form $ax^2 + bx + c$
 - ❖ Quadratic equations
 - ❖ The Quadratic formula
 - ❖ Completing the square
 - ❖ The difference of two squares
 - ❖ GCSE past-paper questions

Year 9 Half Term 6

- **Unit 17: Functional Maths Practice**
 - ❖ The Eden Project
 - ❖ Road Safety
 - ❖ Squirrels
 - ❖ Mobile shop