

**Year 9**

**1. Number: Calculations and Rounding**

- Use BODMAS in calculations
- Add, subtract, multiply and divide with decimals of any size (with and without a calculator)
- Use a calculator to perform more difficult calculations, e.g. using the fraction button
- Round to one, two or three significant figures

**2. Algebra: Algebraic Expressions**

- Understand and use the words expression, equation, formulae, inequality, term and factor
- Use conventional notation in algebra, e.g.  $3 \times a$  is written as  $3a$
- Use symbols  $=$ ,  $\neq$ ,  $<$ ,  $>$ ,  $\leq$ ,  $\geq$
- Rewrite algebraic expressions by taking out common factors which are constants
- Rewrite algebraic expressions by taking out common factors which are terms
- Rewrite algebraic expressions by multiplying a single term over a bracket/expanding brackets
- Use index laws in algebra for positive powers

**3. Shape, Space and Measures: Shapes**

- Recognise 2-D representations of 3-D shapes
- Draw the net of a cube or cuboid
- Draw the front elevation, side elevation and plan view of any 3D shape
- Identify the faces, edges and vertices of any 3D shape

**4. Number: Indices**

- Use index notation and index laws for positive integer powers
- Use prime factor decomposition to write any number as a product of its prime factors
- Find the highest common factor (HCF) and least (lowest) common multiple (LCM) of any two numbers

**5. Algebra: Equations**

- Solve inequalities and represent the solution set on a number line

**6. Shape, Space and Measures: Measures**

- Understand and use compound measures to solve problems, e.g. speed, density

**7. Number: Fractions and Percentages**

- Add and subtract with fractions, including mixed numbers
- Calculate percentage increase/decrease
- Use equivalences between, fractions, decimals and percentages
- Solve problems involving fractions and percentages

**8. Algebra: Formulae**

- Write simple formulae and expressions from real life contexts
- Use formulae to solve problems
- Substitute numbers into formulae (which may be expressed in words or algebraically) and expressions

## Exam Checklist

**9. Shape, Space and Measures: Perimeter, Area and Volume**

- Calculate perimeter and area of a square, rectangle, triangle, kite, parallelogram, rhombus, trapezium and simple compound shapes made from squares, rectangles and triangles
- Calculate circumferences and areas of circles
- Calculate surface area and composite volumes of cubes and cuboids

**10. Handling Data: Tabulation and Representation**

- Plot and interpret scatter diagrams
- Draw a line of best fit, understand what it represents and use it to solve problems
- Draw conclusions from scatter diagrams
- Use terms such as positive correlation, negative correlation, little or no correlation and be able to recognise each of these on a graph when it occurs
- Identify outliers
- Construct and interpret a wide range of graphs and diagrams (pie charts, bar charts, frequency polygons, stem & leaf diagrams)
- Recognise that graphs may be misleading

**11. Number: Ratio**

- Simplify a ratio
- Simplify a ratio with different units
- Understand ratio and use it to calculate proportions
- Apply ratio and proportion to real life contexts and problems (such as those involving conversion, best buy, comparison, scaling, mixing, concentrations, exchange rates)

**12. Algebra: Sequences**

- Find the  $n$ th term of a sequence

**13. Shape, Space and Measures: Transformations**

- Describe and transform 2D shapes using reflections
- Describe and transform 2D shapes using translations
- Describe and transform 2D shapes using single rotations about the origin
- Describe and transform 2D shapes using enlargements by a positive whole number scale factor

**14. Handling Data: Data Analysis**

- Calculate mean from an ungrouped frequency table and identify the mode and median
- Look at data to find patterns and exceptions
- Use one of the measures of average to compare two sets of data

**15. Number: Financial Capability**

- Calculate with money and solve problems in the context of finance (for example: profit and loss, discount, wages and salaries, bank accounts, simple interest, budgeting, debt, APR and AER)
- Apply mathematical concepts to a range of financial situations

**16. Algebra: Graphs**

- Work with coordinates in all four quadrants
- Recognise and plot equations that correspond to straight line graphs
- Construct and interpret linear graphs in real world contexts, e.g. conversion graphs

## Exam Checklist

**17. Shape, Space and Measures: Units and scales**

- Know and use imperial measures still in common use and their approximate metric equivalents (cm & inches, pounds & kg, gallons & litres, etc.)
- Understand and use scale in the context of simple maps and drawings to work out dimensions
- Interpret scales on a range of measuring instruments
- Understand that measurements have an error margin of half the given unit

**18. Handling Data: Probability**

- List all outcomes for single events, and for two successive events, in a systematic way
- Identify different mutually exclusive outcomes and know that the sum of the probabilities of all these outcomes is 1
- Understand the probability of an event not occurring is one minus the probability that it occurs

**Prior knowledge:** It is expected that you will know all of the Year 8 work (see Year 8 checklist)