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# Mathematics

## Year 8

### 1. Integers

- Whole number addition and subtraction
- Whole number multiplication and division
- Number properties
- Divisibility and prime factorisation
- Negative numbers
- Addition and subtraction of negative integers
- Multiplication and division of integers
- Order of operations and substitution
- Worded questions

### 2. Lines, Shapes and Solids

- Angles at a point
- Parallel lines
- Triangles
- Unique triangles
- Quadrilaterals
- Polygons
- Solids and Euler's rule

### 3. Fractions, Decimals and Percentages

- Equivalent fractions
- Operations with fractions
- Operations with negative fractions
- Understanding decimals
- Operations with decimals
- Terminating, recurring and rounding decimals
- Percentages
- Percentages: expressing and finding
- Decreasing and increasing by a percentage
- Calculating percentage change
- Percentages and the unitary method
- Applications

### 4. Measurement and Introduction to Pythagoras theorem

- Length and perimeter
- Circumference of a circle
- Area

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- Area of special quadrilaterals
  - Area of a circle
  - Sectors and composite shapes
  - Surface area of a prism
  - Volume and capacity
  - Volume of prisms and cylinder
  - Time
  - Introduction to Pythagoras' theorem
  - Using Pythagoras' theorem
  - Finding the length of a shorter side

## 5. **Algebra**

- The language of algebra
- Substitution and equivalence
- Adding and subtracting terms
- Multiplying and dividing terms
- Adding and subtracting algebraic fractions
- Multiplying and dividing algebraic fractions
- Expanding brackets
- Factorising expressions
- Applying algebra
- Index laws: multiplying and dividing powers
- Index laws: raising powers

## 6. **Ratios and Rates**

- Introducing ratios
- Simplifying ratios
- Dividing a quantity in a given ratio
- Scale drawings
- Introducing rates
- Ratios and rates and the unitary method
- Solving rate problems
- Speed and velocity

## 7. **Equations and Inequalities**

- Equations review
- Equivalent equations
- Equations with fractions
- Variables on both sides of equations
- Equations with brackets
- Formulas and relationships
- Applications
- Inequalities

- Solving inequalities
- Applications and worded questions

## 8. Probability

- Probability
- Multiple events
- Tree diagrams
- Venn diagrams and two-way tables
- Experimental probability

## 9. Statistics

- Interpreting graphs and tables
- Frequency tables and tallies
- Histograms
- Measures of centre
- Measures of spread
- Surveying and sampling

## 10. Straight Line Graphs

- The number plane
- Rules, tables and graphs
- Finding the rule using tables
- Gradient
- Gradient-intercept form
- The x-intercept
- Applying linear graphs
- Non-linear graphs

## 11. Transformation and Congruence

- Reflection
- Translation
- Rotation
- Congruent figures and Congruent triangles
- Similar figures
- Similar triangles
- Congruence and quadrilaterals

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