

**Year 10**

**1. Number: Calculations and Number Equivalence**

- Understand and use BIDMAS
- Understand and calculate square roots
- Recognise and use relationships between operations, including inverse operations
- Recognise that recurring decimals are exact fractions and that some exact fractions are recurring decimals

**2. Algebra: Equations**

- Set up and solve linear equations in one unknown, including those with the unknown on both sides of the equation and equations of the  $\frac{x}{4} + 3 = 7$  form
- Use trial and improvement to find approximate solutions of equations where there is no simple method of solving them

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

- Measure line segments and angles in geometric figures
- Use the sum of angles in a triangle for example, to deduce the angle sum in any polygon
- Calculate and use the sums of the interior and exterior angles of polygons

**4. Shape, Space and Measures: Pythagoras' Theorem**

- Use Pythagoras' Theorem to find the missing side in a right-angled triangle
- Use Pythagoras' theorem in 2D problems

**5. Handling Data: Data Analysis**

- Estimate mean from a grouped frequency distribution
- Identify the modal class and the class in which the median lies
- Choose the most appropriate average (mean, median or mode) for a given line of enquiry

**6. Algebra: Sequences**

- Find the nth term of a sequence where the rule is linear

**7. Number: Fractions and Percentages**

- Use the four operations with fractions, including mixed numbers
- Calculate the original quantity given the results of a percentage change
- Calculate repeated proportional change

**8. Number: Financial Capability**

- Calculate with money and solve problems in the context of finance (e.g. compound interest, insurance, taxation, mortgages, investments)
- Make informed decisions involving money

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

- Calculate perimeters and areas of composite shapes
- Calculate volumes of prisms
- Solve complex problems involving perimeter, surface area and volume

**10. Algebra: Formulae**

- Change the subject of a simple formula
- Formulate linear equations

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

- Construct and interpret a wide range of graphs and diagrams for discrete and continuous data; recognising that graphs may be misleading
- Construct and interpret frequency tables and diagrams for sets of continuous data

**12. Handling Data: Probability**

- Use probabilities to calculate expectation
- Use 3 circle Venn diagrams to sort data
- Understand and use estimates or measures of probability from relative frequency
- Understand and use relative frequency as an estimate of probability and calculate expected frequency
- Apply knowledge of the rules of probability to calculate an outcome or combination of outcomes
- Compare experimental data and theoretical probabilities
- Understand that increasing sample size generally leads to better estimates of probability

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

- Distinguish properties that are preserved under particular transformations
- Describe and transform 2D shapes using reflections in lines parallel to the x or y axis
- Describe and transform 2D shapes using rotations about any point
- Describe and transform 2D shapes using translations to include use of vector notation
- Describe and transform 2D shapes using enlargements (including by a positive fractional scale factor)
- Understand and use the effect of enlargement on perimeter and area of shapes

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**Summer 2022 examination papers**  
**Topics 1-13**

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**14. Shape, Space and Measures: Constructions**

- Use the standard ruler and compass constructions
- Draw triangles and other 2D shapes using a ruler and protractor
- Understand and use bearings
  - use three figure bearings to define direction
- Identify the loci of points, to include real life problems

**15. Algebra: Graphs**

- Plot and interpret graphs modelling real situations, e.g. distance/time graphs and intersecting travel graphs
- Find and interpret gradients and intercepts of linear graphs
- Find the mid-point and length of a line given in 2D co-ordinates
- Solve two linear equations simultaneously by a graphical method
- Generate points and plot graphs of simple quadratic functions, and use these to find approximate solutions for points of intersection lines of the form  $y = \pm a$  only

**16. Number: Number Systems**

- Understand the principals of number systems

- Convert numbers from Decimal to Binary (base 2) and vice versa

**17. Handling Data: Statistical Planning and Data Collection**

- Design and plan a statistical enquiry
- Collect, tabulate and represent the primary data
- Analyse and present findings

**Prior knowledge:** It is expected that you will know all of the Years 8 and 9 work (see Years 8 and 9 checklists)