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| **Subject** | Foundation Mathematics | **Exam Board** | AQA | **Course Code** | 8300 |

**Overview**

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| **Mock Assessments** |
| One Non-Calculator Paper (Paper 1) 90 minutes. Two Calculator Papers (Papers 2 and 3) 90 minutes for each paper.  Full mathematics equipment required. |

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| Foundation: Number | | R | A | G |
| N1 | Comparing and ordering numbers |  |  |  |
| N2 | Calculating with integers |  |  |  |
| Calculating with decimals |  |  |  |
| Multiplying and dividing with fractions |  |  |  |
| N3 | Using the order of operations |  |  |  |
| N4 | Working with multiples, factors and prime numbers |  |  |  |
| N5 | Applying systematic methods for listing groups |  |  |  |
| N6 | Calculating with powers and roots |  |  |  |
| N7 | Using the laws of indices |  |  |  |
| N8 | Manipulating fractions and mixed numbers |  |  |  |
| Adding and subtracting fractions and mixed numbers |  |  |  |
| N9 | Working with numbers in standard form |  |  |  |
| N10 | Converting between fractions and decimals |  |  |  |
| N11 | Using ratio notation |  |  |  |
| Making links between fractions and ratios |  |  |  |
| N12 | Calculating with percentages |  |  |  |
| Converting between fractions and percentages |  |  |  |
| N13 | Using common units of measurement |  |  |  |
| N14 | Using estimation, including to check the accuracy of calculations |  |  |  |
| N15 | Understanding the use of rounding |  |  |  |
| N16 | Using upper and lower bounds |  |  |  |

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| Foundation: Algebra | | R | A | G |
| A1 | Understanding algebraic notation |  |  |  |
| A2 | Substituting into expressions and formulae |  |  |  |
| A3 | Understanding and using algebraic language and symbols |  |  |  |
| A4 | Simplifying algebraic expressions by collecting like terms |  |  |  |
| Expanding and factorising using a single bracket |  |  |  |

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| Foundation: Algebra | | R | A | G |
|  | Expanding and factorising using two brackets |  |  |  |
| Using the laws of indices with algebraic terms |  |  |  |
| A5 | Understanding and using formulae in words and algebraic formulae |  |  |  |
| Rearranging algebraic formulae to change the subject |  |  |  |
| A6 | Manipulating algebraic expressions to support statements |  |  |  |
| A7 | Understanding and using function machines |  |  |  |
| A8 | Working with coordinates in four quadrants |  |  |  |
| A9 | Plotting straight line graphs |  |  |  |
| Using *y* = *mx* + *c* to identify parallel graphs |  |  |  |
| Using *y* = *mx* + *c* and two points, or one point and the gradient, to write the equation of a line |  |  |  |
| A10 | Working out the gradient of a straight line |  |  |  |
| Working out the *y*-intercept of a straight line |  |  |  |
| A11 | Identifying roots, intercepts and turning points from a quadratic graph |  |  |  |
| Calculating roots of a quadratic graph algebraically |  |  |  |
| A12 | Making links between different types of graphs and their equations |  |  |  |
| A14 | Plotting and interpreting real-life graphs |  |  |  |
| Solving problems involving speed, distance, time and acceleration using graphs |  |  |  |
| A17 | Solving linear equations with one unknown |  |  |  |
| Solving linear equations with one unknown on both sides |  |  |  |
| Solving linear equations using graphs |  |  |  |
| A18 | Solving quadratic equations by factorising |  |  |  |
| Solving quadratic equations using graphs |  |  |  |
| A19 | Solving pairs of simultaneous equations using algebraic methods |  |  |  |
| Solving pairs of simultaneous equations using graphs |  |  |  |
| A21 | Forming and solving equations (including simultaneous equations) from contexts |  |  |  |
| A22 | Solving linear inequalities with one variable |  |  |  |
| Representing inequalities on a number line |  |  |  |

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| Foundation: Algebra | | R | A | G |
| A23 | Writing the terms of a sequence from a rule given in words |  |  |  |
| Writing the terms of a sequence from a given nth term |  |  |  |
| A24 | Recognising and extending 'special' sequences (Square numbers, triangular numbers, ...) |  |  |  |
| Recognising and extending 'other' sequences (Fibonacci, quadratic, geometric, ...) |  |  |  |
| A25 | Writing the nth term of a linear sequence |  |  |  |

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| Foundation: Ratio, proportion and rates of change | | R | A | G |
| R1 | Converting between standard units of: |  |  |  |
| length (mm, cm, m, km) |  |  |  |
| mass (g, kg) |  |  |  |
| volume/capacity (ml, l) |  |  |  |
| area/volume |  |  |  |
| time |  |  |  |
| compound units (speed, density) |  |  |  |
| R2 | Using scale factors |  |  |  |
| Using scale diagrams and maps |  |  |  |
| R3 | Writing one amount as a fraction of another |  |  |  |
| R4 | Simplifying ratios to their lowest terms |  |  |  |
| Writing a ratio in the form 1 : n and n : 1 |  |  |  |
| R5 | Sharing amounts in a given ratio |  |  |  |
| Sharing amounts in contextual problems |  |  |  |
| R6 | Comparing amounts using ratios and fractions |  |  |  |
| R7 | Using proportion as the equality of ratios |  |  |  |
| R8 | Relating ratios to fractions |  |  |  |
| Relating ratios to equations |  |  |  |
| R9 | Understanding the meaning of a percentage |  |  |  |
| Calculating percentages, and percentage changes, using a multiplier |  |  |  |
| Writing one amount as a percentage of another |  |  |  |
| Comparing amounts using percentages |  |  |  |

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| Foundation: Ratio, proportion and rates of change | | R | A | G |
|  | Working with percentages greater than 100% |  |  |  |
| Writing change as a percentage |  |  |  |
| Calculating using percentages in reverse |  |  |  |
| Calculating using simple interest |  |  |  |
| R10 | Solving problems involving direct proportion |  |  |  |
| Solving problems involving inverse proportion |  |  |  |
| R11 | Working with speed, distance and time |  |  |  |
| Working with density, mass and volume |  |  |  |
| Working with pressure, force and area |  |  |  |
| Working with rates, using the unitary method |  |  |  |
| R12 | Solving problems with similar shapes involving length, area and volume |  |  |  |
| Solving problems involving trigonometric ratios and similarity |  |  |  |
| R13 | Understanding and using direct proportion algebraically |  |  |  |
| Understanding and using inverse proportion algebraically |  |  |  |
| R14 | Understanding that the gradient of a line represents a rate of change |  |  |  |
| Recognising graphs that show direct and inverse proportion |  |  |  |
| R16 | Working with repeated proportional changes using a multiplier and a power, including compound percentages |  |  |  |

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| Foundation: Geometry and Measures | | R | A | G |
| G1 | Using mathematical names and conventions with geometric figures |  |  |  |
| G2 | Using a straight edge and a pair of compasses to construct: |  |  |  |
| the perpendicular bisector of a line segment |  |  |  |
| a perpendicular to a given line from and at a given point |  |  |  |
| the bisector of a given angle |  |  |  |
| an accurate drawing of a sketch of a geometric  figure |  |  |  |
| Using constructions to solve loci problems |  |  |  |

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| Foundation: Geometry and Measures | | R | A | G |
| G3 | Using angle facts to solve problems, including: |  |  |  |
| the sum of angles at a point, and on a straight line |  |  |  |
| vertically opposite angles |  |  |  |
| alternate and corresponding angles in parallel lines |  |  |  |
| the sum of angles in a triangle |  |  |  |
| the sum of angles in polygons, using the sum of  angles in a triangle |  |  |  |
| G4 | Describing the properties of common quadrilaterals |  |  |  |
| G5 | Using the basic criteria for congruent triangles |  |  |  |
| G6 | Reasoning mathematically with geometric figures |  |  |  |
| G7 | Applying and describing the transformation of geometric figures  using: |  |  |  |
| reflection |  |  |  |
| translation |  |  |  |
| rotation |  |  |  |
| enlargement by positive, integer scale factors |  |  |  |
| enlargement by positive, fractional scale factors |  |  |  |
| G9 | Identifying and naming the parts of a circle |  |  |  |
| G11 | Solving problems using coordinates |  |  |  |
| G12 | Identifying and naming common 3D solids |  |  |  |
| Identifying and naming the parts of a 3D solid |  |  |  |
| G13 | Constructing plans and elevations of 3D solids |  |  |  |
| G14 | Using standard units of measure (length, area, volume/capacity, mass, time, money, etc) |  |  |  |
| G15 | Measuring and drawing lines angles |  |  |  |
| Interpreting maps and scale drawings |  |  |  |
| Using bearings to describe direction |  |  |  |
| G16 | Knowing and applying formulae to calculate using: |  |  |  |
| area of triangles, parallelograms, trapezia |  |  |  |
| volume of cuboids |  |  |  |
| volume of prisms |  |  |  |
| volume of cylinders |  |  |  |

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| Foundation: Geometry and Measures | | R | A | G |
| G17 | Knowing and applying formulae to calculate using: |  |  |  |
| circumference of circles |  |  |  |
| area of circles |  |  |  |
| Calculating the area and perimeter of compound shapes, involving  circles |  |  |  |
| Calculating the surface area and volume of spheres, pyramids,  cones and composite solids, using given formulae |  |  |  |
| G18 | Calculating using the lengths of arcs and the area of sectors |  |  |  |
| G19 | Understanding the effect of transformations, applying this to  congruence and similarity |  |  |  |
| G20 | Knowing and using Pythagoras' Theorem to calculate lengths in  right-angled triangles |  |  |  |
| Knowing and using the trigonometric ratios to calculate lengths in  right-angled triangles |  |  |  |
| Knowing and using the trigonometric ratios to calculate angles in  right-angled triangles |  |  |  |
| G21 | Knowing the exact values for specific trigonometric ratios |  |  |  |
| G24 | Describing translation in 2D using vectors |  |  |  |
| G25 | Calculating using 2D column vectors |  |  |  |

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| Foundation: Probability | | R | A | G |
| P1 | Constructing and interpreting two-way tables, frequency tables and  frequency trees |  |  |  |
| Comparing relative frequencies to theoretical probabilities |  |  |  |
| P2 | Finding probabilities from lists and tables |  |  |  |
| Understanding the idea of relative frequency as an estimate of  theoretical probability |  |  |  |
| Understanding the concept of randomness |  |  |  |
| P3 | Understanding and using the 0 – 1 probability scale |  |  |  |
| Estimating probabilities using relative frequency |  |  |  |
| P4 | Understanding and using the sum of the probabilities of mutually  exclusive events (= 1) |  |  |  |
| P5 | Understanding the benefit of conducting a greater number of trials  in an experiment |  |  |  |
| P6 | Completing tables to show outcomes of an event |  |  |  |
| Completing tree diagrams to show outcomes and probabilities |  |  |  |
| Constructing and interpreting Venn diagrams |  |  |  |
| Understanding and using set notation used with reference to Venn  diagrams |  |  |  |

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| Foundation: Probability | | R | A | G |
| P7 | Listing the outcomes to events in systematic ways |  |  |  |
| Using and interpreting two-way tables |  |  |  |
| Using and interpreting frequency trees |  |  |  |
| Calculating probabilities from tables |  |  |  |
| P8 | Calculating probabilities using the 'and' and 'or' rules |  |  |  |
| Understanding whether two events are 'independent' or  'dependent' |  |  |  |
| Using a tree diagram to calculate probabilities |  |  |  |

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| Foundation: Statistics | | R | A | G |
| S1 | Analysing sets of data for patterns and outliers |  |  |  |
| Understanding the benefits and limitations of sampling |  |  |  |
| S2 | Constructing and interpreting: |  |  |  |
| frequency tables |  |  |  |
| bar charts, vertical line charts and frequency  diagrams |  |  |  |
| pictograms |  |  |  |
| pie charts |  |  |  |
| time series graphs |  |  |  |
| two-way tables |  |  |  |
| S4 | Calculating the mean, median, mode and range for a list of data |  |  |  |
| Estimating the mean, and finding the interval containing the  median, of grouped data |  |  |  |
| S5 | Using the mean, median, mode and range, as well as diagrams to  describe sets of data |  |  |  |
| S6 | Using and interpreting scatter diagrams |  |  |  |
| Recognising correlation and describing relationships from scatter  diagrams |  |  |  |
| Drawing lines of best fit and estimating unknown values |  |  |  |

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| **Useful revision resources**  **Websites**  Mathswatch - <https://vle.mathswatch.co.uk/vle/>  Corbett Maths – <https://corbettmaths.com/>  GCSEPod - <https://www.gcsepod.com/>  Seneca Learning -<https://senecalearning.com/en-GB/>  BBC Bitesize Learning - <https://www.bbc.co.uk/bitesize/examspecs/z8sg6fr>  Oak National Academy - <https://classroom.thenational.academy/subjects-by-key-stage/key-stage-4/subjects/maths>  SPARX  **Recommended Revision Guides**  Collins GCSE AQA revision guides - £5 from your mathematics teacher  Corbett Maths revision cards - £6.50 from your mathematics teacher  **Recommended Calculators**  Casio fx-83 GTX, fx-85 GTX, Casio Classwiz EX-991 (recommended if continuing onto A-Level Mathematics) |
| <**Revision Tips**  Revision for Mathematics is based upon practice (and more practice). You need to be confident at the skills and concepts that make up the course in order to be able to work through the more challenging problems. Revision should be interactive, not just reading notes  Students can work through the Mathswatch 6 week plan (available from the Mathswatch Website under Extras > GCSE) or identify key topic areas via the Mathswatch list below. On the 6 week plan, students can split it up according to the two assessment periods)  A potential plan of action would be   * Work through the plans below watching the relevant videos (try the one minute videos first and if you do not understand then watch the longer videos) * Attempting the interactive questions if needed * Work through maths problems and past papers. * Do not just read your notes/revision guides as you need to practice your Maths skills.   Any additional information will be placed into the GSHS Maths Revision Area <http://bit.ly/GSHSMathsRevision> |

**Given Formulae for Assessments**

