Testbourne Community School

Mathematics AQA GCSE
Mock Revision Summary List – **Higher Tier**

Year 11 – November 2024

Mock Paper Details

Mathematics paper 1:

Non-calculator paper

- Written exam: 1hr 30 min
- 80 marks
- 50% of Autumn Mock

Mathematics paper 2:

Calculator paper

- Written exam: 1hr 30 min
- 80 marks
- 50% of Autumn Mock

Topics will be selected from the following list and may be on either or both of the papers

- Complete a probability tree for a given situation in order to answer probability questions using 'and' and 'or' rules as appropriate solving problems for both independent and dependent events.
- Understand and solve problems involving histograms.
- Solve problems involving Venn diagrams and probability. For Venn diagrams know and use the symbols for intersection, union and complement.
- Expand brackets in algebra.
- Solve inequalities.
- Represent inequalities on a graph.
- Solve algebraic equations including those with brackets and fractions.
- Know special sequences, understand nth term rules for sequences.
- Identify rules linking one term to the next term in sequences and describe them algebraically.
- Substitute positive and negative numbers into algebraic based formula.
- Add, subtract and solve equations containing algebraic fractions.
- Simplify algebraic expressions.
- Solve equations using the balance method and solve equations using graphs.
- Calculate percentages and percentage increase/decrease.
- Factorise linear and quadratic expressions in algebra.
- Understand ratio and be able to solve standard and more complex problems related to ratio.
- Add, subtract, multiply and divide integers, decimals and fractions with and without a calculator.
- Apply the rules of BIDMAS to calculations and when substituting into formula and algebraic expressions.
- Be able to work with Fractions, decimals and percentages using percentage multiplier as necessary.
- Understand and be able to solve problems related to reverse percentages and percentage change.
- Understand and use simple and compound interest in financial problems and repeated percentage change in growth/decay and depreciation/appreciation problems.
- Be able to express one number as a fraction of another.
- Round numbers to a given number of decimal places and significant figures and estimate the value of calculations including squares and roots.
- Solve problems related in 2D and 3D shapes related to perimeter, area and volume.
- Be able to convert between units of area and unit of volume. E.g. m^2 to cm^2, mm^3 to m^3.
- Solve problems related to compound measures such as speed, density and pressure.
- Solve problems where items are in direct proportion and inverse proportion constructing and using formula as necessary.
- Look at directly proportional and inversely proportional equations and describe what happens to one variable when the other changes.
- Use the rules of SURDS to simplify and evaluate surds, including those in brackets.
- Understand and find the value of numbers with powers/fractional powers and negative fractional powers (using the rules of indices).
- Convert recurring decimals to exact fractions.

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	• Calculate the Area and circumference/perimeter of circles/parts of circles including arc lengths and areas of sectors (giving answers in terms of π if required). • Know the relationship between angles in special quadrilaterals and solve related problems involving angles. • Know and use Pythagoras theorem in a variety of contexts. • Know how to calculate in speed, distance time problems and apply this knowledge to solve journey based problems. • Plot and use coordinates on a grid. • Know and use basic angle facts such as angles in a triangle, quadrilateral, angles at a point, angles on a straight line and angles in parallel lines. • Solve problems related to interior and exterior angles in polygons. • Know and use circle theorems to solve angle problems. • Understand and solve problems using vector representation (line vectors and column vectors). • Understand and use relative frequency (probability from experiments/trials). • Work out averages from frequency and grouped frequency tables. • Be able to draw and interpret pie charts, frequency polygons, frequency diagrams and scatter graphs. • Be able to complete cumulative frequency graphs and tables from given data. • Understand cumulative frequency, median, inter-quartile range and box plots. • Compare median averages and interquartile ranges to comment on sets of data. • Change the subject of a formula (re-arrange the formula) including where the subject appears twice. • Understand the difference between an expression, equation, formulae and identity. • Recognise quadratic and cubic graphs and their equations. • Solve linear simultaneous equations. • Substitute values into a given formula to answer questions. • Complete algebraic proofs. • Understand number and algebra function machines. • Complete the square in algebra and know how this result relates to a quadratic graph and its turning points and other key features. • Understand reciprocals. • Understand and solve problems related to the equations of straight lines y=mx+c, understanding gradients and intercepts and parallel and perpendicular lines. • Solve quadratic equations by factorising, completing the square or using the quadratic formula. • Be able to order numbers given as powers of 10 including working with numbers in standard form. • Solve problems involving proportion. • Use a ruler and compasses to identify, using valid loci constructions, regions given by certain criteria. • Draw plans views and elevations (plan, front and side) of 3D shapes on a 2D cm grid. • Draw and Interpret distance time graphs that represent journeys. • Solve shape-based problems linking algebra and shape. • Solve problems in similar shapes. • Know and use length, area and volume scale factors. • Look at graphs representing a real-life situation and make criticisms. • Use trigonometry (SOHCAHTOA) and Pythagoras in 2D and 3D problems. • Understand and use bearings. • Solve upper and lower bounds problems. • Know how to transform shapes (enlargement, reflection, rotation and translation) and how to recognise these on a grid. • Know what the terms similar, congruent and invariant mean and use this to solve problems. • Know the conditions that prove congruency in triangles (SAS, ASA etc). • Recognise and sketch trigonometrical graphs of Sine (Sin), Cosine (Cos) and Tangent (Tan).

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Essential equipment
Black pens, pencils, rubber, ruler, protractor, pair of compasses and a scientific calculator for Paper 2.

Mathematical skills
Students will be required to complete calculations without a calculator (paper 1) and with a calculator (paper 2).
Students will be required to recall and what they have learnt and apply this to unfamiliar situations.

Students will have to use some of the formulae that they are expected to have learnt. For some of the questions formula may be given and in these cases, students are required to be able to use the formula. (Students will be given in advance of the mock, a copy of the formula sheet that will be provided for the examinations)

Working out and quality of written communication
Students are required to present their full working out for all questions and to answer questions in a clear manner that is easy to follow.

Revision materials
CGP Books GCSE Maths AQA Revision Guides and Workbooks for the Mathematics Grade 9-1 Course. (**check with your teacher on your tier of entry for the mock exams – either foundation or higher**)
TCS SharePoint – Students (Student Portal) – Subjects – Maths will provide subject links to GCSE revision resources for the Higher and Foundation Tiers. Downloadable content and other revision media is available here. Within these areas you will find some useful resources, that you may want to use now and in 2025 prior to the summer examinations.

Suggested revision activities and websites
Make mind maps, revision mats or flash/revision cards for each topic. Answer practice exam questions and go back through your year 10 on-line mock papers and assessments and feedback. There are practice questions and answers in the revision workbooks from CGP Books and on SharePoint as detailed above. Re-do Mymaths tasks from Year 10 and Year 11 so far. Note also that the following websites may also prove useful:-

Maths Genie • Learn GCSE Maths for Free
Videos and Worksheets – Corbettmaths
https://www.aqa.org.uk/find-past-papers-and-mark-schemes
https://www.cgpbooks.co.uk

GCSE in Mathematics
These examinations represent part of the AQA GCSE Specification that was designed to be more ‘rigorous’ than the existing GCSE specification taught prior to 2015 in line with Government requirements. Students should expect to be required to apply their knowledge to more problem solving based questions and to apply knowledge in new unfamiliar contexts.