**GCSE**

**MATHEMATICS**

**C300QS**

**Summer 2022 examinations**

| | | |
|---|---|---|
| Component 1 | Non-calculator mathematics | Friday, 20 May 2022 |
| Component 2 | Calculator-allowed mathematics | Tuesday, 7 June 2022 |

# Advance Information

## General information for students and teachers

This advance information provides the focus of the content of the Summer 2022 examination papers.

It does not apply to any other examination series.

It is intended to support revision.

It may be used at any time from the date of release.

It must not be taken into the examination.

# Subject information for students and teachers

A guidance document on advance information has been produced by The Joint Council for Qualifications (JCQ) on behalf of all awarding organisations. It can be found here.

This information provides the focus of the assessment on both of the GCSE Mathematics **Foundation tier and Higher tier** question papers. The information for each component is provided in specification order and not in question order.

It is advised that teaching and learning should still cover the entire subject content in the specification. This is to ensure that students are as well prepared as possible for progression to the next stage of their education. Also, topics not included in the list may be assessed in low tariff, multiple choice or synoptic questions.

INFORMATION

- There are no restrictions on who can use this notice.
- The format/structure of the papers remains unchanged.

ADVICE

- Students and teachers should consider how to revise other parts of the specification, for example to review whether other topics may provide knowledge which helps understanding in relation to the areas being assessed.

The following areas of content are suggested as key areas of focus for revision and final preparation for the GCSE mathematics Foundation tier and Higher tier papers in 2022.

## Component 1 Foundation tier and Component 2 Foundation tier

| | **Component 1 Foundation** | **Component 2 Foundation** |
|---|---|---|
| **Number** | | |
| Structure and calculation | Ordering decimals | Inequality notation |
| | Applying the four operations to integers, decimals and fractions | Applying the four operations including the vocabulary sum and product |
| | Order of operations | Types of numbers e.g. prime, factor, multiple, lowest common multiple |
| | Simplifying fractions | Number line |
| | Systematic listing | Positive integer powers |
| | Positive integer powers and real roots | Standard form conversion |
| | Calculating exactly with fractions | |
| | Calculating exactly with multiples of $\pi$ | |
| Decimals/Fractions /Percentages*<br><br>*Additional percentage work is covered in the ratio section | Interchanging between the three forms | Fraction of an amount |
| | Fraction of an amount | Percentage of an amount |
| | Percentage of an amount | |

| | Component 1 Foundation | Component 2 Foundation |
|---|---|---|
| Measures and accuracy | Calculations with money | Calculations with money |
| | Estimating answers | Calculations with time |
| | | Using a calculator efficiently |
| | | Rounding to a given number of decimal places or significant figures |
| | | Interpreting answers and rounding appropriately |
| **Algebra** | | |
| Notation, vocabulary and manipulation | Substituting numerical values into formulae | Substituting numerical values into formulae |
| | Writing expressions | Writing expressions |
| | Understanding and using formulae | Collecting like terms |
| | Collecting like terms | Multiplying a single term over a bracket |
| | Multiplying a single term over a bracket | |
| | Expanding two brackets | |
| | Factorising a quadratic | |
| | Changing the subject of a formula | |
| Graphs | Coordinates in four quadrants | Finding the equation of a straight line through two given points |
| | Plotting and interpreting graphs in real contexts | Identifying and interpreting the gradient of linear graphs |
| Solving equations and inequalities | Quadratic equation | Linear equations |
| | | Linear inequalities |
| | | Representing the solution of an inequality on a number line |
| Sequences | | Sequence from diagram patterns |
| **Ratio, proportion and rates of change** | | |
| | Changing units of time and capacity | Changing units of time, length and mass |
| | Ratio notation: writing in simplest form | Ratio notation: writing in simplest form |
| | Dividing a given quantity in a ratio | Application of scale to a real context |
| | Percentage increase and decrease | Relating ratios to fractions |
| | Direct and inverse proportion | Percentage increase |
| | Exchange rates | Direct proportion |
| | Using compound units such as rates of pay, litres per minute, unit pricing and those involving costs | Using compound units such as those involving costs |
| | Comparing lengths using ratio notation | Repeated percentage change |

| | Component 1 Foundation | Component 2 Foundation |
|---|---|---|
| **Geometry** | | |
| Properties and constructions | Using standard conventions for lines, shapes and angles | Using standard conventions for lines, shapes and angles |
| | Angle calculations including parallel lines | Angle calculations |
| | Properties of triangles and quadrilaterals | Properties of triangles and quadrilaterals |
| | Congruent triangles | Congruent shapes |
| | Geometric problems on coordinate axes | Enlargement |
| | Plans and elevations | |
| Mensuration and calculation | Measuring lines | Measuring angles |
| | Scale drawings | Area of a rectangle |
| | Bearings | Area of a triangle |
| | Volume of a cone | Perimeter of a rectangle |
| | | Area of a circle including simple sectors |
| | | Trigonometry |
| **Probability** | | |
| | Probability including vocabulary and scale | Expected outcomes |
| | Tree diagrams | Applying the property that the probabilities of an exhaustive set of outcomes sum to one |
| | | Probability using outcomes |
| | | Venn diagrams |
| **Statistics** | | |
| | Inferring properties of populations knowing limitations | Estimating the mean from a grouped frequency table |
| | Bar charts | Using and interpreting scatter graphs |
| | Pie chart | |
| | Mode | |
| | Range | |

# Component 1 Higher tier and Component 2 Higher tier

| | Component 1 Higher | Component 2 Higher |
|---|---|---|
| **Number** | | |
| Structure and calculation | Applying the four operations to integers, decimals and fractions | Applying the four operations |
| | Product of prime factors | Product rule for counting |
| | Roots and integer/fractional indices | |
| | Calculating exactly with fractions | |
| | Calculating exactly with surds; including rationalising the denominator | |
| | Calculating exactly with multiples of $\pi$ | |
| | Calculating with and interpreting standard form | |
| Decimals/Fractions /Percentages*<br><br>*Additional percentage work is covered in the ratio section | Changing recurring decimals into their corresponding fractions and vice versa | |
| | Percentage of an amount | |
| Measures and accuracy | | Upper and lower bounds |
| **Algebra** | | |
| Notation, vocabulary and manipulation | Expanding two brackets | Multiplying a single term over a bracket |
| | Factorising a quadratic | Simplifying expressions involving sums, products and powers |
| | Simplifying expressions involving sums, products and powers | |
| | Changing the subject of a formula | |
| | Functions; including inverse functions and composite functions | |
| Graphs | Trigonometric graphs | Equations of parallel and perpendicular lines |
| | Sketching translations and reflections of functions | Finding the equation of a straight line through one point with a given gradient |
| | Plotting and interpreting graphs in real contexts | Finding the equation of a straight line through two given points |
| | Equation of a circle | Identifying and interpreting the gradient of linear functions graphically and algebraically |

| | Component 1 Higher | Component 2 Higher |
|---|---|---|
| Solving equations and inequalities | Quadratic equation | Linear equations |
| | Translating a procedure into an algebraic expression | Quadratic equation |
| | Deriving and solving an equation | Solving an equation using a numerical method |
| | | Translating a procedure into an algebraic expression |
| | | Deriving and solving an equation |
| | | Linear inequalities |
| | | Representing the solution of an inequality on a number line |
| | | Representing inequalities graphically |
| Sequences | | Next term of a sequence |
| | | *n*th term of a quadratic sequence |
| **Ratio, proportion and rates of change** | | |
| | Applying ratio to a problem | Changing units of time |
| | Finding the original value | Density |
| | Direct and inverse proportion | Ratio notation: writing in simplest form |
| | Exchange rates | Relating ratios to fractions |
| | Using compound units such as litres per minute and km per litre | Expressing one quantity as a percentage of another |
| | Population density | Direct proportion |
| | Comparing lengths using ratio notation | Average speed |
| | Average rate of change | Equation/formula for proportion |
| | | Repeated percentage change |
| **Geometry** | | |
| Properties and constructions | Using standard conventions for lines, shapes and angles | Using standard conventions for lines, shapes and angles |
| | Properties of triangles and quadrilaterals | Using the standard ruler and compass constructions to solve loci problems |
| | Congruent triangles | Angle calculations |
| | Circle theorems | Enlargement; including fractional and negative scale factors |
| | Plans and elevations | |
| Mensuration and calculation | Scale drawings | Measuring angles |
| | Area of a composite shape | Area of a triangle |
| | Volume of a cone | Volume of a sphere |
| | Pythagoras' theorem | Volume of a cylinder |
| | Exact trigonometric values | Right-angled triangle trigonometry |
| | | Sine rule |
| | | Cosine rule |
| | | Area of a triangle using trigonometry |
| Vectors | Addition of vectors | |
| | Diagrammatic and column representations of vectors | |

| | Component 1 Higher | Component 2 Higher |
|---|---|---|
| **Probability** | | |
| | Using data to find a probability | Finding a probability |
| | Tree diagrams | Conditional probability |
| | Conditional probability | Venn diagrams |
| **Statistics** | | |
| | Inferring properties of populations knowing limitations | Cumulative frequency |
| | Histograms | Box plots |
| | | Estimating the mean from a grouped frequency table |
| | | Estimating the median from a grouped frequency table |
| | | Using statistics to describe a population |
| | | Using and interpreting scatter graphs |

End of advance information