

# Advance information June 2022

## GCSE Mathematics (8300)

### Version 1.1\*

Because of the ongoing impacts of the Coronavirus (COVID-19) pandemic, we are providing advance information on the focus of June 2022 exams to help students revise.

This is the advance information for GCSE Mathematics (8300).

## Information

- This advance information covers all examined components.
- There are no restrictions on who can use this.
- The format/structure of the papers remains unchanged.
- For each paper the list shows the major focus of questions.
- The information is presented in specification order and not in question order.
- You are **not** permitted to take this advance information into the exam.
- There are separate lists for Foundation and Higher tiers.

## Advice

- The following areas of content are suggested as key areas of focus for revision and final preparation, in relation to the June 2022 examinations.
- 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 your understanding in relation to the areas being tested in June 2022.
- Students will be credited for using any relevant or appropriate knowledge from any topic areas when answering questions.

## Focus of the June 2022 exam

Foundation Tier  
8300/1F June 2022

Topic	Detail
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<b>Number (see Ratio)</b>	
<b>Arithmetic</b>	Four operations
	Negative number
	Order of operations
	Estimation
<b>Fractions</b>	Arithmetic
	Fraction of a number
<b>Indices</b>	Laws of Indices
<b>Standard Form</b>	Conversion
	Calculation
<b>Other</b>	Inequality notation
	Systematic listing

<b>Algebra</b>	
<b>Equations</b>	Linear
<b>Graphs</b>	Recognise
	Plot
	Linear graph
	Intersection of lines
	Interpret
<b>Reasoning</b>	Formula
<b>Sequences</b>	Sequence rule to find a term

<b>Ratio (see Number)</b>	
<b>Conversions</b>	Lengths
<b>Percentage</b>	Percentage of an amount
	Amount as a percentage
<b>Fraction</b>	Fraction less than 1
<b>Ratio</b>	Simplest form
	Ratio to fraction
<b>Applications</b>	Cost problem
	Density

<b>Geometry and Measures</b>	
<b>Shapes</b>	Naming circle part
	Types of triangle
	Translation
<b>Area and Volume</b>	Perimeter
	Sector of a circle
<b>Angles</b>	In triangles
<b>Constructions</b>	Region

<b>Statistics</b>
Two-way table
Averages problem
Outlier
<b>Probability</b>
Problem
Venn diagram

**Foundation Tier  
8300/2F June 2022**

Topic	Detail
<b>Number (see Ratio)</b>	
<b>Arithmetic</b>	Order of operations
<b>Fractions</b>	Fraction of a number
	Improper fraction
	Fraction to decimal
<b>Properties</b>	Number line decimal
	Number problem
	Prime number
	Cube number
	Decimal place
<b>Other</b>	Inequality notation
<b>Algebra</b>	
<b>Equations</b>	Linear
<b>Manipulation</b>	Equivalent expressions
	Terms
	Multiply out
	Factorisation
<b>Graphs</b>	Coordinates
	Midpoint
	Point on line
	Intercept of a line
	Gradient of a line
	Equation of a line
<b>Ratio (see Number)</b>	
<b>Conversions</b>	Time
<b>Percentage</b>	Ratio and percentage
	Percentage increase
	Percentage decrease
<b>Ratio</b>	n : 1 form
<b>Applications</b>	Proportion problem
	Scale diagram
	Better value
	Ratio to percentage
	Equation to percentage
	Rate of output

<b>Geometry and Measures</b>	
<b>Shapes</b>	Draw shape
	Quadrilateral
	Parallelogram
	Part of circle
	Pythagoras
<b>Measures</b>	Time problem
<b>Area and Volume</b>	Compound shape

<b>Statistics</b>	
	Pie chart
	Range
	Mean
<b>Probability</b>	
	Relative frequency
	Expected value
	Tree diagram

**Foundation Tier  
8300/3F June 2022**

Topic	Detail
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<b>Number (see Ratio)</b>	
<b>Properties</b>	Place value
	Factor
	Multiple
	Highest Common Factor
	Error interval
<b>Indices</b>	Calculation
<b>Other</b>	Money problem
	Units of measure

<b>Algebra</b>	
<b>Equations</b>	Number machine
<b>Manipulation</b>	Simplification
	Substitution
	Formula
<b>Graphs</b>	Roots
	Turning point
<b>Sequences</b>	Arithmetic
	Geometric
	$n$ th term

<b>Ratio (see Number)</b>	
<b>Conversions</b>	Lengths
	Time
<b>Ratio</b>	Share into a ratio
<b>Applications</b>	Ratio problem
	Interpretation
	Ratio to graph
	Average speed
<b>Percentage</b>	Percentage increase
<b>Fraction</b>	Fraction to percentage

<b>Geometry and Measures</b>	
<b>Shape</b>	Name
	Regular
	Line symmetry
	Rotational symmetry
	Circle
	Cylinder
	Sphere
	Trigonometry
<b>Area and Volume</b>	Compound shape
	Perimeter
<b>Angles</b>	Alternate angles
<b>Other</b>	Vector arithmetic

<b>Statistics</b>	
	Two-way table
	Vertical line diagram
	Mean from diagram
	Bar chart
<b>Probability</b>	
	Frequency tree
	Estimate of probability

**Foundation Tier Aggregated Content June 2022**  
**Number (\* see Ratio – some overlap of topic areas)**

<b>Topic</b>	<b>Detail</b>
<b>Arithmetic</b>	Four operations
	Negative number
	Order of operations
	Estimation
<b>Fractions*</b>	Arithmetic
	Fraction of a number
	Improper fraction
	Fraction to decimal
<b>Properties</b>	Number line decimal
	Number problem
	Place value
	Prime number
	Factor
	Multiple
	Highest Common Factor
	Cube number
	Decimal place
Error interval	
<b>Indices</b>	Laws of indices
	Calculation
<b>Standard Form</b>	Conversion
	Calculation
<b>Other</b>	Inequality notation
	Money problem
	Systematic listing
	Units of measure



## Algebra

Topic	Detail
<b>Equations</b>	Number machine
	Linear
<b>Manipulation</b>	Equivalent expressions
	Terms
	Multiply out
	Factorisation
	Simplification
	Substitution
	Formula
<b>Graphs</b>	Coordinates
	Midpoint
	Point on line
	Intercept of a line
	Gradient of a line
	Roots
	Turning point
	Equation of a line
	Recognise
	Plot
	Linear graph
	Intersection of lines
	Interpret
<b>Reasoning</b>	Formula
<b>Sequences</b>	Sequence rule to find a term
	Arithmetic
	Geometric
	$n$ th term

**Ratio (\*see Number – some overlap of topic areas)**

<b>Topic</b>	<b>Detail</b>
<b>Conversions</b>	Lengths
	Time
<b>Percentage*</b>	Percentage of an amount
	Amount as a percentage
	Ratio and percentage
	Percentage increase
	Percentage decrease
<b>Fraction*</b>	Fraction less than 1
	Fraction to percentage
<b>Ratio</b>	Simplest form
	n : 1 form
	Share into a ratio
	Ratio to fraction
<b>Applications</b>	Ratio problem
	Scale diagram
	Better value
	Interpretation
	Ratio to graph
	Ratio to percentage
	Equation to percentage
	Cost problem
	Rate of output
	Average speed
	Density
Proportion problem	

### Geometry and Measures

Topic	Detail
<b>Shape</b>	Draw shape
	Name
	Regular
	Line symmetry
	Rotational symmetry
	Quadrilateral
	Parallelogram
	Naming circle part
	Part of circle
	Circle
	Cylinder
	Sphere
	Types of triangle
	Pythagoras
	Trigonometry
Translation	
<b>Measures</b>	Time problem
<b>Area and Volume</b>	Compound shape
	Perimeter
	Sector of a circle
<b>Angles</b>	In triangles
	Alternate angles
<b>Constructions</b>	Region
<b>Other</b>	Vector arithmetic

### Statistics

<b>Diagrams</b>	Two-way table
	Pie chart
	Vertical line diagram
	Bar chart
<b>Measures</b>	Averages problem
	Outlier
	Range
	Mean
	Mean from diagram

### Probability

Frequency tree
Relative frequency
Expected value
Problem
Estimate of probability
Venn diagram
Tree diagram

**Higher Tier**  
**8300/1H June 2022**

<b>Topic</b>	<b>Detail</b>
<b>Number (see Ratio)</b>	
<b>Arithmetic</b>	Decimal
<b>Fractions</b>	Arithmetic
	Fraction of a number
	Value as fraction of another
	Recurring decimals as fractions
<b>Percentage</b>	Percentage as operator
<b>Indices</b>	Laws of Indices
<b>Standard Form</b>	Conversion
	Calculation
<b>Surds</b>	Simplification
<b>Algebra</b>	
<b>Equations</b>	Of a straight line
	Linear
<b>Manipulation</b>	Identity
	Simplification of algebraic fraction
	Simplification
	Factorisation of quadratic
	Change subject
<b>Graphs</b>	Recognise
	Sketch function
	Speed time
	Inequality region
	Interpret
<b>Sequences</b>	Algebraic
<b>Ratio (see Number)</b>	
<b>Ratio</b>	Simplest form
	Proportion problem
<b>Geometry and Measures</b>	
<b>Shape</b>	Congruence
	Prism
	Faces
	Exact trigonometric values
<b>Area and Volume</b>	Sector a of circle
<b>Vectors</b>	Vector geometry
<b>Constructions</b>	Region

<b>Statistics</b>
Cumulative frequency
<b>Probability</b>
Venn diagram
Tree diagram
Expected value
Independent events

**Higher Tier**  
**8300/2H June 2022**

Topic	Detail
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<b>Number (see Ratio)</b>	
<b>Properties</b>	Prime number
	Cube number
	Reciprocal
	Decimal places
	Bounds
<b>Fractions</b>	Products
<b>Indices</b>	Negative

<b>Algebra</b>	
<b>Equations</b>	Of a circle
	Linear
	Quadratic
	Number line inequality
<b>Manipulation</b>	Factorisation of quadratic
	Multiply out
	Completing the square
<b>Graphs</b>	Coordinate problem
	Perpendicular lines
	Turning point
<b>Functions</b>	Inverse
<b>Sequences</b>	Triangular number

<b>Ratio (see Number)</b>	
<b>Ratio</b>	Share into a ratio
	On a line
<b>Fraction</b>	To percentage
<b>Conversions</b>	Time
<b>Applications</b>	Equation to percentage
	Rate of output
	Pressure
<b>Percentage</b>	Percentage increase
	Percentage decrease

<b>Geometry and measures</b>	
<b>Area and Volume</b>	Compound shape
	Cone
	Hemisphere
	Volume scale factor
<b>Shape</b>	Plan
	Pythagoras
<b>Measures</b>	Time
<b>Other</b>	Geometric proof

<b>Statistics</b>
Estimation from sample
Pie chart
Mean
<b>Probability</b>
Relative frequency
Expected value
Notation

**Higher Tier  
8300/3H June 2022**

Topic	Detail
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<b>Number (see Ratio)</b>	
<b>Properties</b>	Highest Common Factor
	Lowest Common Multiple
	Error interval
<b>Decimals</b>	Ordering
	Recurring
<b>Other</b>	Product rule for counting

<b>Algebra</b>	
<b>Equations</b>	Quadratic
	Simultaneous linear/quadratic
<b>Manipulation</b>	Simplification
	Triple bracket
	Factorisation
<b>Graphs</b>	Quadratic
	Roots
	Turning points
	Quadratic
<b>Functions</b>	Exponential
	Composite
<b>Sequences</b>	Arithmetic
	Geometric
	$n$ th term

<b>Ratio (see Number)</b>	
<b>Ratio</b>	Share into a ratio
<b>Applications</b>	Average speed
	Population density
<b>Percentages</b>	Percentage increase
	Compound interest

<b>Geometry and Measures</b>	
<b>Area and Volume</b>	Compound shape
	Cylinder
<b>Shape</b>	Quadrilateral
	Circle theorems
	Trigonometry
	Sine/Cosine rule
<b>Vectors</b>	Vector arithmetic
<b>Other</b>	Bearing



<b>Statistics</b>
Two-way table
Histogram
Box plot
Median, quartiles
Interquartile range
Line of best fit
Outlier
<b>Probability</b>
Independent events

**Higher Tier Aggregated Content June 2022**  
**Number (\* see Ratio – some overlap of topic areas)**

<b>Topic</b>	<b>Detail</b>
<b>Arithmetic</b>	Decimal
<b>Fractions*</b>	Arithmetic
	Fraction of a number
	Value as fraction of another
	Products
	Recurring decimals as fractions
<b>Properties</b>	Prime number
	Highest Common Factor
	Lowest Common Multiple
	Cube number
	Reciprocal
	Decimal places
	Error interval
	Bounds
<b>Percentage*</b>	Percentage as operator
<b>Decimals</b>	Ordering
	Recurring
<b>Indices</b>	Laws of indices
	Negative
<b>Standard Form</b>	Conversion
	Calculation
<b>Surds</b>	Simplification
<b>Other</b>	Product rule for counting

## Algebra

Topic	Detail
<b>Equations</b>	Of a straight line
	Of a circle
	Linear
	Quadratic
	Simultaneous linear/quadratic
	Number line inequality
<b>Manipulation</b>	Identity
	Simplification
	Multiply out
	Simplification of algebraic fraction
	Factorisation of quadratic
	Triple bracket
	Change subject
	Factorisation
	Completing the square
Quadratic	
<b>Graphs</b>	Coordinate problem
	Perpendicular lines
	Roots
	Turning points
	Recognise
	Quadratic
	Exponential
	Sketch function
	Speed time
	Inequality region
	Interpret
<b>Functions</b>	Inverse
	Composite
<b>Sequences</b>	Triangular number
	Arithmetic
	Geometric
	Algebraic
	$n$ th term

**Ratio (\*see Number – some overlap of topic areas)**

Topic	Detail
<b>Ratio</b>	Simplest form
	Share into a ratio
	On a line
	Proportion problem
<b>Fraction*</b>	To percentage
<b>Percentage*</b>	Percentage increase
	Percentage decrease
	Compound Interest
<b>Conversions</b>	Time
<b>Applications</b>	Equation to percentage
	Rate of output
	Pressure
	Average speed
	Population density

**Geometry and Measures**

Topic	Detail
<b>Shape</b>	Quadrilateral
	Congruence
	Circle theorems
	Prism
	Faces
	Plan
	Pythagoras
	Trigonometry
	Exact trigonometrical values
	Sine/Cosine rule
<b>Area and Volume</b>	Compound shape
	Cylinder
	Cone
	Hemisphere
	Sector of a circle
	Volume scale factor
<b>Measures</b>	Time
<b>Vectors</b>	Vector arithmetic
	Vector geometry
<b>Constructions</b>	Region
<b>Other</b>	Bearing
	Geometric proof

### Statistics

Topic	Detail
<b>Diagrams</b>	Two-way table
	Pie chart
	Cumulative frequency
	Histogram
	Box plot
	Line of best fit
<b>Measures</b>	Mean
	Median, quartiles
	Interquartile range
	Outlier
<b>Populations</b>	Estimation from sample

### Probability

Relative frequency
Expected value
Venn diagram
Tree diagram
Notation
Independent events

\* This advance information has been updated. The reference **Algebra – Graphs – Solve equations** has been removed from page 9. The relevant content is captured in greater detail within the paper and tier descriptions on pages 2–11.

END OF ADVANCE INFORMATION