Advance Information for November 2022

GCSE (9−1)

Mathematics

J560

We have produced this advance information to support teachers and students with revision for the November 2022 examinations.

Information

- This notice covers all examined components.
- There are no restrictions on who can use this notice.
- You are **not** permitted to take this notice into the exam.
- This document has **22** pages.

Advice

- The information is presented in Section A at paper level and in Section B at tier level.
- The information is presented in approximate specification order and not in question order. Any given question may require content from more than one description.
- Topics not explicitly given in the list may appear in low tariff items or via synoptic questions.
- It is advised that teaching and learning should still cover the entire subject content in the specification.
- You should consider how you 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 2022.
- Students and teachers can discuss this notice.

If you have any queries about this notice, please call our Customer Support Centre on **01223 553998** or email support@ocr.org.uk.

SECTION A

J560/01 Paper 1 Foundation Tier

Number OCR1, OCR2, OCR3, OCR4

Content section	Description
Arithmetic	Money calculations
Whole number theory	Definitions and terms
	Highest Common Factor (HCF) and Lowest Common Multiple (LCM)
Inverse operations	Use inverse operations
Fractions	Equivalent fractions
	Calculations with fractions
	Fractions of a quantity
Decimals	Write fractions as decimals or vice-versa
	Calculations with decimals
Percentages	Percentage calculations
Ordering fractions, decimals and percentages	Use inequality symbols
Powers and roots	Calculate powers and roots
Standard form	Standard form notation
	Standard form calculations
Approximation and estimation	Rounding

Ratio, proportion and rate of change OCR5

Content section	Description
Calculations with ratio	Equivalent ratios
	Share a quantity in a given ratio
	Calculate one quantity from another
	Ratios and fractions
	Solve ratio problems
Direct and inverse proportion	Direct proportion
Growth and decay	Compound interest

Algebra OCR6, OCR7

Content section	Description
Algebraic expressions	Simplify algebraic expressions by collecting like terms
	Simplify algebraic products and quotients
	Take out common factors
Algebraic formulae	Formulate algebraic expressions
	Substitute into a formula
	Rearrange a formula
	Use kinematics formulae
Algebraic equations	Simultaneous equations
Sequences	Continue a sequence
Graphs	x- and y-coordinates

Geometry OCR8, OCR9, OCR10

Content section	Description
Conventions, notation and terms	Draw a diagram from a written description
Ruler and compass constructions	Perpendicular bisector
	Angle bisector
	Perpendicular from a point to a line
	Loci
Angles	Angles in a triangle
Properties of polygons	Symmetry
	Quadrilaterals
Use and convert standard units of measurement	Distance, length, mass, money, volume
Compound units	Unit pricing, acceleration, density, speed, velocity
Maps and scale drawings	Bearings and compass points
Triangle mensuration	Trigonometry

Probability OCR11

Content section	Description
Basic probability and experiments	The probability scale
	Relative frequency and probability
	Equally likely outcomes and probability
Combined events and probability diagrams	Venn diagrams

Statistics OCR12

Content section	Description
Interpreting and representing data	Bar chart
Analysing data	Mean

J560/02 Paper 2 Foundation Tier

Number OCR1, OCR2, OCR3, OCR4

Content section	Description
Arithmetic	Money calculations
Calculations with integers	Non-calculator methods
Whole number theory	Definitions and terms
	Prime factors
Fractions	Equivalent fractions
	Calculations with fractions
Decimals	Write fractions as decimals or vice-versa
	Calculations with decimals
Percentages	Convert between fractions, decimals and percentages
	Percentage of quantities
	Percentage calculations
	Percentage change
Ordering fractions, decimals and percentages	Listing in order
Powers and roots	Index notation
	Calculate powers and roots
Approximation and estimation	Rounding
	Estimation

Ratio, proportion and rate of change OCR5

Content section	Description
Calculations with ratio	Write as a ratio
	Simplify ratio
	Equivalent ratios
	Ratios and fractions
	Solve ratio and proportion problems
Growth and decay	Simple interest

Algebra OCR6, OCR7

Content section	Description
Algebraic expressions	Multiply out brackets
Algebraic formulae	Substitute into an algebraic expression
Algebraic equations	Linear equations
Algebraic inequalities	Linear inequalities
Graphs	Straight line graphs
	Quadratic graphs
Interpreting graphs	Gradients

Geometry OCR8, OCR9, OCR10

Content section	Description
Angles	Angles on a line
	Angles between intersecting lines
	Angles in polygons
Three-dimensional shapes	Plans and elevations
Use and convert standard units of measurement	Mass, money
Compound units	Unit pricing
Maps and scale drawings	Construct and interpret scale drawings
Area calculations	Triangle, rectangle
Triangle mensuration	Pythagoras' theorem

Probability OCR11

Content section	Description
Basic probability and experiments	Equally likely outcomes and probability
	Probability calculations
Combined events and probability diagrams	Sample spaces
	Tree diagrams
	Calculation using the laws of probability

Statistics OCR12

Content section	Description
Interpreting and representing data	Pictogram, time series
	Graphical misrepresentation

J560/03 Paper 3 Foundation Tier

Number OCR1, OCR2, OCR3, OCR4

Content section	Description
Whole number theory	Prime factors
	Highest Common Factor (HCF) and Lowest Common Multiple (LCM)
Combining arithmetic operations	Priority of operations
Fractions	Equivalent fractions
	Calculations with fractions
	Fractions of a quantity
Decimals	Calculations with decimals
Percentages	Percentage change
Ordering fractions, decimals and percentages	Listing in order
	Use inequality symbols
Powers and roots	Index notation
	Laws of indices
Standard form	Standard form notation

Ratio, proportion and rate of change OCR5

Content section	Description
Calculations with ratio	Write as a ratio
	Simplify ratio
	Equivalent ratios
	Solve ratio and proportion problems
Direct and inverse proportion	Direct proportion
	Inverse proportion

Algebra OCR6, OCR7

Content section	Description
Algebraic formulae	Substitution into an algebraic expression
Algebraic equations	Linear equations
	Quadratic equations
	Graphical solutions of simultaneous equations
Functions	Function machines
Interpreting Graphs	Graphs of real-world contexts
	Gradients

Geometry OCR8, OCR9, OCR10

Content section	Description
Transformations	Reflection and rotation
Congruence	Congruent triangles
Vectors	Vector arithmetic
Similarity	Similar triangles
	Apply similarity to calculate unknown lengths
Use and convert standard units of measurement	Length, time
Compound units	Unit pricing, interpret a gradient
Perimeter calculations	Perimeters of rectilinear shapes and circumference of a circle
Area calculations	Circle
Volume and surface area calculations	Cuboid

Probability OCR11

Content section	Description
Basic probability and experiments	Relative frequency and probability
Combined events and probability diagrams	List outcomes and use sample spaces
	Tree diagrams
	Calculations using the laws of probability

Statistics OCR12

Content section	Description
Interpreting and representing data	Scatter diagrams, correlation and outliers

J560/04 Paper 4 Higher Tier

Number OCR1, OCR2, OCR3, OCR4

Content section	Description
Whole number theory	Highest Common Factor (HCF) and Lowest Common Multiple (LCM)
Percentages	Percentage calculations
Powers and roots	Calculate powers and roots
Standard form	Standard form notation
Approximation and estimation	Rounding
	Estimation

Ratio, proportion and rate of change OCR5

Content section	Description
Calculations with ratio	Share a quantity in a given ratio
	Solve ratio problems
Direct and inverse proportion	Direct proportion
Growth and decay	Growth and decay problems

Algebra OCR6, OCR7

Content section	Description
Algebraic formulae	Formulate algebraic expressions
	Substitute into formulae
	Rearrange formulae
	Use kinematics formulae
Algebraic equations	Linear equations
	Quadratic equations
	Simultaneous equations
Sequences	Quadratic and special sequences
Straight line graphs	Parallel and perpendicular lines
Transformations of curves and their equations	Translations and reflections

Geometry OCR8, OCR9, OCR10

Content section	Description
Conventions, notation and terms	Draw a diagram from a written description
Ruler and compass constructions	Perpendicular bisector
	Angle bisector
	Perpendicular from a point to a line
	Loci
Angles	Angles in a triangle
Similarity	Apply similarity to calculate unknown lengths
Use and convert standard units of measurement	Area, distance, mass, time, volume
Compound units	Acceleration, density, velocity
Maps and scale drawings	Bearings and compass points
Volume and surface area calculations	Cuboid, sphere, cone
Triangle mensuration	Pythagoras' theorem
	Trigonometry in right-angled triangles

Probability OCR11

Content section	Description
Basic probability and experiments	Relative frequency and probability
Combined events and probability diagrams	Product rule for counting outcomes
	Venn diagrams

Statistics OCR12

Content section	Description
Interpreting and representing data	Cumulative frequency graphs
	Histograms
Analysing data	Summary statistics of grouped data

J560/05 Paper 5 Higher Tier

Number OCR1, OCR2, OCR3, OCR4

Content section	Description
Calculations with integers	Non-calculator methods
Whole number theory	Definitions and terms
Fractions	Calculations with fractions
Decimals	Recurring decimals
	Calculations with decimals
Percentages	Convert between fractions, decimals and percentages
	Percentage calculations
	Percentage change
Ordering fractions, decimals and percentages	Listing in order
Powers and roots	Index notation
	Calculation and estimation of powers and roots
Exact calculations	Use surds in exact calculations
	Manipulate surds

Ratio, proportion and rate of change OCR5

Content section	Description
Calculations with ratio	Share a quantity in a given ratio
	Ratios and fractions
	Solve ratio and proportion problems
Growth and decay	Growth and decay problems

Algebra OCR6, OCR7

Content section	Description
Algebraic expressions	Show two algebraic expressions are equivalent
	Multiply out brackets
	Complete the square
	Algebraic fractions
Algebraic formulae	Formulate algebraic expressions
Algebraic equations	Linear equations
	Quadratic equations
	Approximate solutions using a graph
Algebraic inequalities	Inequalities in one variable

Content section	Description
Graphs of equations and functions	Polynomial functions
	Exponential functions
	Trigonometric functions
Straight line graphs	Find and draw equations of straight lines
Interpreting graphs	Graphs of real-world contexts
	Gradients

Geometry OCR8, OCR9, OCR10

Content section	Description
Angles	Angles on a line
	Angles between intersecting and parallel lines
Circles	Standard circle theorems
Three-dimensional shapes	Plans and elevations
Similarity	Similar triangles
Use and convert standard units of measurement	Distance, length, time
Compound units	Unit pricing, speed
Maps and scale drawings	Construct and interpret scale drawings
Area calculations	Triangle, parallelogram, trapezium
Triangle mensuration	Pythagoras' theorem
	Exact trigonometric ratios

Probability OCR11

Content section	Description
Basic probability and experiments	Equally likely outcomes and probability
Combined events and probability diagrams	Sample spaces
	Calculations using the laws of probability

Statistics OCR12

Content section	Description
Interpreting and representing data	Time series
	Graphical misrepresentation

J560/06 Paper 6 Higher Tier

Number OCR1, OCR2, OCR3, OCR4

Content section	Description
Whole number theory	Highest Common Factor (HCF) and Lowest Common Multiple (LCM)
Percentages	Percentage calculations
	Percentage change
Powers and roots	Index notation
	Calculate powers and roots
	Laws of indices
Standard form	Standard form notation
	Standard form calculations
Exact calculations	Use surds in exact calculations
Approximation and estimation	Rounding
	Upper and lower bounds

Ratio, proportion and rate of change OCR5

Content section	Description
Calculations with ratio	Solve ratio and proportion problems
Direct and inverse proportion	Direct proportion
	Inverse proportion

Algebra OCR6, OCR7

Content section	Description
Algebraic expressions	Simplify algebraic expressions
	Factorise algebraic expressions
	Algebraic fractions
Algebraic formulae	Formulate algebraic expressions
Algebraic equations	Linear equations
	Quadratic equations
	Simultaneous equations
Algebraic inequalities	Inequalities in two variables
Functions	Function machines
Graphs of equations and functions	Equations of circles
Straight line graphs	Find the equation of a line
	Identify solution sets of linear inequalities

Content section	Description
Interpreting graphs	Graphs of real-world contexts
	Gradients
	Areas

Geometry OCR8, OCR9, OCR10

Content section	Description
Transformations	Identify, describe and perform transformations
Similarity	Similar triangles
	Apply similarity to calculate unknown lengths
Use and convert standard units of measurement	Distance, length, time
Compound units	Acceleration, speed
Perimeter calculations	Perimeters of rectilinear shapes
Volume and surface area calculations	Cuboid
Triangle mensuration	Sine rule and cosine rule

Probability OCR11

Content section	Description
Combined events and probability diagrams	Tree diagrams
	Calculations using the laws of probability

Statistics OCR12

Content section	Description
Interpreting and representing data	Box plots
	Scatter diagrams, correlation and outliers
Analysing data	Summary statistics of grouped data

SECTION B

FOUNDATION TIER

Number OCR1, OCR2, OCR3, OCR4

Content section	Description
Arithmetic	Money calculations
Calculations with integers	Non-calculator methods
Whole number theory	Definitions and terms
	Prime factors
	Highest Common Factor (HCF) and Lowest Common Multiple (LCM)
Combining arithmetic operations	Priority of operations
Inverse operations	Use inverse operations
Fractions	Equivalent fractions
	Calculations with fractions
	Fractions of a quantity
Decimals	Write fractions as decimals or vice-versa
	Calculations with decimals
Percentages	Convert between fractions, decimals and percentages
	Percentage of quantities
	Percentage calculations
	Percentage change
Ordering fractions, decimals and percentages	Listing in order
	Use inequality symbols
Powers and roots	Index notation
	Calculate powers and roots
	Laws of indices
Standard form	Standard form notation
	Standard form calculations
Approximation and estimation	Rounding
	Estimation

Ratio, proportion and rate of change OCR5

Content section	Description
Calculations with ratio	Write as a ratio
	Simplify ratio
	Equivalent ratios
	Share a quantity in a given ratio
	Calculate one quantity from another
	Ratios and fractions
	Solve ratio and proportion problems
Direct and inverse proportion	Direct proportion
	Inverse proportion
Growth and decay	Simple interest
	Compound interest

Algebra OCR6, OCR7

Content section	Description
Algebraic expressions	Simplify algebraic expressions by collecting like terms
	Simplify algebraic products and quotients
	Multiply out brackets
	Take out common factors
Algebraic formulae	Formulate algebraic expressions
	Substitute into formulae and algebraic expressions
	Rearrange a formula
	Use kinematics formulae
Algebraic equations	Linear equations
	Quadratic equations
	Simultaneous equations
	Graphical solutions of simultaneous equations
Algebraic inequalities	Linear inequalities
Functions	Function machines
Sequences	Continue a sequence
Graphs	x- and y-coordinates
	Straight line graphs
	Quadratic graphs
Interpreting graphs	Graphs of real-world contexts
	Gradients

Geometry OCR8, OCR9, OCR10

Content section	Description
Conventions, notation and terms	Draw a diagram from a written description
Ruler and compass constructions	Perpendicular bisector
	Angle bisector
	Perpendicular from a point to a line
	Loci
Angles	Angles on a line
	Angles between intersecting lines
	Angles in polygons
Properties of polygons	Symmetry
	Quadrilaterals
Three-dimensional shapes	Plans and elevations
Transformations	Reflection and rotation
Congruence	Congruent triangles
Vectors	Vector arithmetic
Similarity	Similar triangles
	Apply similarity to calculate unknown lengths
Use and convert standard units of measurement	Distance, length, mass, money, time, volume
Compound units	Unit pricing, acceleration, density, speed, velocity, interpret a gradient
Maps and scale drawings	Bearings and compass points
	Construct and interpret scale drawings
Perimeter calculations	Perimeters of rectilinear shapes and circumference of a circle
Area calculations	Triangle, rectangle, circle
Volume and surface area calculations	Cuboid
Triangle mensuration	Pythagoras' theorem
	Trigonometry

Probability OCR11

Content section	Description
Basic probability and experiments	The probability scale
	Relative frequency and probability
	Equally likely outcomes and probability
	Probability calculations
Combined events and probability diagrams	List outcomes and use sample spaces
	Venn diagrams
	Tree diagrams
	Calculations using the laws of probability

Statistics OCR12

Content section	Description
Interpreting and representing data	Bar chart, pictogram, time series
	Scatter diagrams, correlation and outliers
	Graphical misrepresentation
Analysing data	Mean

HIGHER TIER

Number OCR1, OCR2, OCR3, OCR4

Content section	Description
Calculations with integers	Non-calculator methods
Whole number theory	Definitions and terms
	Highest Common Factor (HCF) and Lowest Common Multiple (LCM)
Fractions	Calculations with fractions
Decimals	Recurring decimals
	Calculations with decimals
Percentages	Convert between fractions, decimals and percentages
	Percentage calculations
	Percentage change
Ordering fractions, decimals and percentages	Listing in order
Powers and roots	Index notation
	Calculation and estimation of powers and roots
	Laws of indices
Standard form	Standard form notation
	Standard form calculations
Exact calculations	Use surds in exact calculations
	Manipulate surds
Approximation and estimation	Rounding
	Estimation
	Upper and lower bounds

Ratio, proportion and rate of change OCR5

Content section	Description
Calculations with ratio	Share a quantity in a given ratio
	Ratios and fractions
	Solve ratio and proportion problems
Direct and inverse proportion	Direct proportion
	Inverse proportion
Growth and decay	Growth and decay problems

Algebra OCR6, OCR7

Content section	Description
Algebraic expressions	Show two algebraic expressions are equivalent
	Simplify algebraic expressions
	Multiply out brackets
	Factorise algebraic expressions
	Complete the square
	Algebraic fractions
Algebraic formulae	Formulate algebraic expressions
	Substitute into formulae
	Rearrange formulae
	Use kinematics formulae
Algebraic equations	Linear equations
	Quadratic equations
	Simultaneous equations
	Approximate solutions using a graph
Algebraic inequalities	Inequalities in one variable
	Inequalities in two variables
Functions	Function machines
Sequences	Quadratic and special sequences
Graphs of equations and functions	Polynomial functions
	Exponential functions
	Trigonometric functions
	Equations of circles
Straight line graphs	Find and draw equations of straight lines
	Identify solution sets of linear inequalities
	Parallel and perpendicular lines
Transformations of curves and their equations	Translations and reflections
Interpreting graphs	Graphs of real-world contexts
	Gradients
	Areas

Geometry OCR8, OCR9, OCR10

Content section	Description
Conventions, notation and terms	Draw a diagram from a written description
Ruler and compass constructions	Perpendicular bisector
	Angle bisector
	Perpendicular from a point to a line
	Loci
Angles	Angles on a line
	Angles between intersecting and parallel lines
	Angles in a triangle
Circles	Standard circle theorems
Three-dimensional shapes	Plans and elevations
Transformations	Identify, describe and perform transformations
Similarity	Similar triangles
	Apply similarity to calculate unknown lengths
Use and convert standard units of measurement	Area, distance, length, mass, time, volume
Compound units	Unit pricing, acceleration, density, speed, velocity
Maps and scale drawings	Bearings and compass points
	Construct and interpret scale drawings
Perimeter calculations	Perimeters of rectilinear shapes
Area calculations	Triangle, parallelogram, trapezium
Volume and surface area calculations	Cuboid, sphere, cone
Triangle mensuration	Pythagoras' theorem
	Trigonometry in right-angled triangles
	Exact trigonometric ratios
	Sine rule and cosine rule

Probability OCR11

Content section	Description
Basic probability and experiments	Relative frequency and probability
	Equally likely outcomes and probability
Combined events and probability diagrams	Sample spaces
	Product rule for counting outcomes
	Venn diagrams
	Tree diagrams
	Calculations using the laws of probability

Statistics OCR12

Content section	Description
Interpreting and representing data	Time series
	Cumulative frequency graphs
	Histograms
	Box plots
	Scatter diagrams, correlation and outliers
	Graphical misrepresentation
Analysing data	Summary statistics of grouped data

END OF ADVANCE INFORMATION

OCR
Oxford Cambridge and RSA