Pearson Edexcel GCSE (9–1)

November 2022 Assessment Window

Syllabus reference **1MA1**

Mathematics

Advance Information

You are not permitted to take this notice into the examination.
This document is valid if downloaded from the Pearson Qualifications website.

Instructions

- Please ensure that you have read this notice before the examination.

Information

- This notice covers all examined components.
- The format/structure of the assessments remains unchanged.
- This advance information details the focus of the content of the exams in the November 2022 assessments.
- There are no restrictions on who can use this notice.
- This notice is meant to help students to focus their revision time.
- Students and teachers can discuss the advance information.
- This document has 26 pages.

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General advice

- In addition to covering the content outlined in the advance information, students and teachers should consider how to:
  - manage their revision of parts of the specification which may be assessed in areas not covered by the advance information
  - manage their revision of other parts of the specification which may provide knowledge which helps with understanding the areas being tested in 2022.
- For specifications with synoptic assessments, topics not explicitly given in the advance information may appear, e.g. where students are asked to bring together knowledge, skills and understanding from across the specification.
- For specifications with optional papers/topics/content, students should only refer to the advance information for their intended option.
- For specifications with NEA, advance information does not cover any NEA components.

A link to the Joint Council for Qualifications guidance document on advance information can be found on the Joint Council for Qualifications website or here.

Please note, whilst the Advance Information and assessment materials are new for November 2022, the information contained in the JCQ guidance for Summer 2022 remains relevant for November 2022.

Advance Information

Subject specific section

- Advance information will be provided for each paper and for each tier of entry.
- The information is presented in approximate specification order and does not reflect the order of the questions.
- Questions may be answerable using one or more of the indicated areas of specification content.
- The areas of content listed are suggested as key areas of focus for revision and final preparation, in relation to the November 2022 examinations.
- The aim should still be to cover all specification content in teaching and learning.
- Students may need to draw on prior knowledge and skills.
- Students will still be expected to apply their knowledge to unfamiliar contexts.
- Students responses to questions may draw upon knowledge, skills and understanding from across the content listed when responding to questions.
- Students will be credited for using any relevant knowledge from any other topic areas when answering questions.

Exam Aid

- A formula sheet will be provided for foundation tier and higher tier students.

Paper 1F – grouped by content area

Number (*see Ratio – some overlap of topic areas)	
Arithmetic	Money
	Multiplication of decimals
Fractions	Decimal to fraction
	Fraction of an amount
	Fraction arithmetic
	One amount as a fraction of another
Properties	Order of operations
	Factors
	Product of prime factors
Powers and roots	Positive integer powers
	Laws of indices
Algebra	
Manipulation	Simplification
	Factorise quadratic
Equations and inequalities	Linear equation
	Form an equation
	Linear inequality
Graphs	Coordinates
	Midpoint
Ratio, proportion and rates of change (*see Number – some overlap of topic areas)	
Conversions	Length, time
	Scale drawing

Percentages	Percentage of an amount
	One quantity as a percentage of another
Ratio	Write as a ratio
	Share in a ratio
	Use of ratio
Proportion	Direct proportion
Compound Measures	Speed
	Pressure
Geometry and measures	
Shape	Transformations
Angles	Angles at a point
Length, area and volume	Perimeter
	Area of a rectangle
Probability	
Probability	Probability scale
	Probability
Statistics	
Diagrams	Composite bar chart
Measures	Mode
Populations	Infer properties of population

Paper 2F – grouped by content area

Number (*see Ratio – some overlap of topic areas)	
Arithmetic	Money
Fractions	Fraction of an amount
	Order fractions
Properties	Place value
	Order integers
	Reciprocal
Approximation and estimation	Error interval
Algebra	
Manipulation	Substitute values
	Simplification
	Expand bracket
	Form an expression
Equations and inequalities	Linear equation
	Quadratic equation
Graphs	Coordinates
	Quadratic graph
Sequences	*n*th term of a linear sequence
Ratio, proportion and rates of change (*see Number – some overlap of topic areas)	
Conversions	Length, time
Percentages	Percentage as a fraction
	Percentage of an amount
	Reverse percentage

Proportion	Direct proportion
	Inverse proportion
Growth and decay	Compound interest
Geometry and measures	
Shape	Plan and elevation
Angles	Measure an angle
Length, area and volume	Measure a length
	Area of a rectangle
	Area of a triangle
	Area of a sector
Pythagoras' Theorem and Trigonometry	Trigonometry
Statistics	
Diagrams	Bar chart
	Stem and leaf diagram
	Scatter graph
Measures	Median
	Mean

Paper 3F – grouped by content area

Number (*see Ratio – some overlap of topic areas)	
Arithmetic	Money
Fractions	Fraction to decimal
	Fraction of an amount
Properties	Order decimals
	Place value
	Multiples
Standard Form	Conversion
	Calculation
Approximation and estimation	Rounding
Other	Calculator use
Algebra	
Manipulation	Change subject of a formula
Graphs	Coordinates
	Straight line graph
	Conversion graph
	Travel graph
Sequences	Terms of a sequence
Ratio, proportion and rates of change (*see Number – some overlap of topic areas)	
Conversions	Mass, volume, speed
Ratio	Write as a ratio
	Share in a ratio
	Use of ratio
Proportion	Direct proportion

Compound Measures	Speed
Geometry and measures	
Shape	Transformations
	Similar triangles
Angles	Angles in a triangle
	Angles in a quadrilateral
Length, area and volume	Volume of a cuboid
	Volume of a cylinder
Vectors	Column vectors
	Diagrammatic representation of vector
Probability	
Probability	Frequency tree
	Tree diagram
	Combined events
Statistics	
Diagrams	Interpret graph
	Pie chart
Measures	Mean

Paper 1H – grouped by content area

Number (*see Ratio – some overlap of topic areas)	
Arithmetic	Multiplication of decimals
Fractions	Fraction arithmetic
	One amount as a fraction of another
Properties	Multiples
	Highest Common Factor
	Product of prime factors
Powers and roots	Laws of indices
	Fractional indices
	Simplification of surds
	Calculate exactly with surds
Algebra	
Manipulation	Simplification
	Substitute values
	Factorise
	Difference of two squares
	Algebraic fractions
Equations and inequalities	Linear simultaneous equations
	Quadratic equation
Graphs	Graph of cubic function
	Graph of trigonometric functions
Sequences	Geometric sequence
Ratio, proportion and rates of change (*see Number – some overlap of topic areas)	
Percentages	One quantity as a percentage of another

Ratio	Write as a ratio
	Use of ratio
Proportion	Inverse proportion
Compound Measures	Pressure
Geometry and measures	
Shape	Transformations
Angles	Angles in a triangle
	Circle theorems
Length, area and volume	Area of a rectangle
	Arc length
	Volume and surface area of a cone
	Volume and surface area of a sphere
Pythagoras' Theorem and Trigonometry	Sine Rule
	Exact trigonometric values
Probability	
Probability	Expected frequency
	Combined independent events
	Combined dependent events
Statistics	
Diagrams	Histogram
Populations	Infer properties of population

Paper 2H – grouped by content area

Number (*see Ratio – some overlap of topic areas)	
Arithmetic	Money
Fractions	Recurring decimal to fraction
Approximation and estimation	Bounds
Algebra	
Manipulation	Substitute values
Equations and inequalities	Equations of parallel lines
	Quadratic equation
	Equation of a circle
	Equation of a tangent to a circle
Graphs	Coordinates
	Quadratic graph
	Region defined by linear inequalities
	Gradient of a curve
Functions	Composite and inverse functions
Sequences	*n*th term of a linear sequence
Ratio, proportion and rates of change (*see Number – some overlap of topic areas)	
Percentages	Percentage profit
	Depreciation
	Reverse percentage
Proportion	Direct proportion
Compound Measures	Compound interest
Growth and decay	General iterative processes

Geometry and measures	
Shape	Plan and elevation
	Areas and volumes of similar figures
Length, area and volume	Area of a rectangle
	Area of a triangle
	Area of a sector
Pythagoras' Theorem and Trigonometry	Trigonometry
	Pythagoras' Theorem
	Trigonometry in 3-D
Statistics	
Diagrams	Scatter graph
	Cumulative frequency graph
	Box plot
Measures	Median, upper and lower quartiles
Populations	Capture-recapture method

Paper 3H – grouped by content area

Number (*see Ratio – some overlap of topic areas)	
Standard Form	Conversion
	Calculation
Approximation and estimation	Error interval
Other	Mathematical symbols
	Product rule for counting
Algebra	
Manipulation	Simplification
	Change subject of a formula
	Laws of indices
	Expand brackets
	Completing the square
	Algebraic fractions
Graphs	Turning point
	Transformation of functions
Ratio, proportion and rates of change (*see Number – some overlap of topic areas)	
Conversions	Volume, speed
Percentages	One quantity as a percentage of another
Ratio	Write as a ratio
	Share in a ratio
	Use of ratio
Compound Measures	Density

Geometry and measures	
Shape	Similar triangles
	Combined transformations
	Congruent triangles
Angles	Angles on a straight line
	Angles in a triangle
	Circle theorems
	Angles of a polygon
Length, area and volume	Area of a triangle
	Volume of a cylinder
Pythagoras' Theorem and Trigonometry	Cosine Rule
Vectors	Vector geometry
Probability	
Probability	Frequency tree
	Tree diagram
	Combined events
	Expected frequency
Statistics	
Diagrams	Cumulative frequency graph
Measures	Mean

Foundation Tier: Collated content for Papers 1F, 2F and 3F

Number (*see Ratio – some overlap of topic areas)	
Arithmetic	Money
	Multiplication of decimals
Fractions	Decimal to fraction
	Fraction to decimal
	Fraction of an amount
	Fraction arithmetic
	One amount as a fraction of another
	Order fractions
Properties	Place value
	Order integers
	Order decimals
	Order of operations
	Factors
	Multiples
	Product of prime factors
	Reciprocal
Powers and roots	Positive integer powers
	Laws of indices
Standard Form	Conversion
	Calculation
Approximation and estimation	Rounding
	Error interval
Other	Calculator use

Algebra	
Manipulation	Simplification
	Substitute values
	Expand bracket
	Factorise quadratic
	Form an expression
	Change subject of a formula
Equations and inequalities	Linear equation
	Form an equation
	Linear inequality
	Quadratic equation
Graphs	Coordinates
	Midpoint
	Conversion graph
	Travel graph
	Straight line graph
	Quadratic graph
Sequences	*n*th term of a linear sequence
	Terms of a sequence
Ratio, proportion and rates of change (*see Number – some overlap of topic areas)	
Conversions	Length, time, mass, volume, speed
	Scale drawing

Percentages	Percentage as a fraction
	Percentage of an amount
	One quantity as a percentage of another
	Reverse percentage
Ratio	Write as a ratio
	Share in a ratio
	Use of ratio
Proportion	Direct proportion
	Inverse proportion
Compound Measures	Speed
	Pressure
Growth and decay	Compound interest
Geometry and measures	
Shape	Plan and elevation
	Transformations
	Similar triangles
Angles	Measure an angle
	Angles at a point
	Angles in a triangle
	Angles in a quadrilateral

Length, area and volume	Measure a length
	Perimeter
	Area of a rectangle
	Area of a triangle
	Area of a sector
	Volume of a cuboid
	Volume of a cylinder
Pythagoras' Theorem and Trigonometry	Trigonometry
Vectors	Column vectors
	Diagrammatic representation of vector
Probability	
Probability	Probability scale
	Probability
	Frequency tree
	Tree diagram
	Combined events
Statistics	
Diagrams	Interpret graph
	Bar chart
	Composite bar chart
	Stem and leaf diagram
	Scatter graph
	Pie chart
Measures	Median, mean, mode
Populations	Infer properties of population

Higher Tier: Collated content for Papers 1H, 2H and 3H

Number (*see Ratio – some overlap of topic areas)	
Arithmetic	Money
	Multiplication of decimals
Fractions	Fraction arithmetic
	One amount as a fraction of another
	Recurring decimal to fraction
Properties	Multiples
	Highest Common Factor
	Product of prime factors
Powers and roots	Laws of indices
	Fractional indices
	Simplification of surds
	Calculate exactly with surds
Standard Form	Conversion
	Calculation
Approximation and estimation	Bounds
	Error interval
Other	Mathematical symbols
	Product rule for counting

Algebra	
Manipulation	Simplification
	Substitute values
	Factorise
	Change subject of a formula
	Laws of indices
	Expand brackets
	Completing the square
	Difference of two squares
	Algebraic fractions
Equations and inequalities	Linear simultaneous equations
	Equations of parallel lines
	Quadratic equation
	Equation of a circle
	Equation of a tangent to a circle
Graphs	Coordinates
	Quadratic graph
	Graph of cubic function
	Region defined by linear inequalities
	Gradient of a curve
	Graph of trigonometric functions
	Transformation of functions
	Turning point
Functions	Composite and inverse functions

Sequences	*n*th term of a linear sequence
	Geometric sequence
Ratio, proportion and rates of change (*see Number – some overlap of topic areas)	
Conversions	Volume, speed
Percentages	Percentage profit
	One quantity as a percentage of another
	Depreciation
	Reverse percentage
Ratio	Write as a ratio
	Share in a ratio
	Use of ratio
Proportion	Direct proportion
	Inverse proportion
Compound Measures	Compound interest
	Pressure
	Density
Growth and decay	General iterative processes
Geometry and measures	
Shape	Plan and elevation
	Transformations
	Combined transformations
	Similar triangles
	Areas and volumes of similar figures
	Congruent triangles

Angles	Angles on a straight line
	Angles in a triangle
	Angles of a polygon
	Circle theorems
Length, area and volume	Area of a rectangle
	Area of a triangle
	Area of a sector
	Arc length
	Volume of a cylinder
	Volume and surface area of a cone
	Volume and surface area of a sphere
Pythagoras' Theorem and Trigonometry	Trigonometry
	Pythagoras' Theorem
	Trigonometry in 3-D
	Sine Rule
	Cosine Rule
	Exact trigonometric values
Vectors	Vector geometry

Probability	
Probability	Frequency tree
	Expected frequency
	Tree diagram
	Combined events
	Combined dependent events
	Combined independent events
Statistics	
Diagrams	Scatter graph
	Cumulative frequency graph
	Box plot
	Histogram
Measures	Median, upper and lower quartiles
	Mean
Populations	Infer properties of population
	Capture-recapture method

Foundation Tier Formulae Sheet

Perimeter, area and volume

Where a and b are the lengths of the parallel sides and h is their perpendicular separation:

Area of a trapezium = $\frac{1}{2}(a + b)\,h$

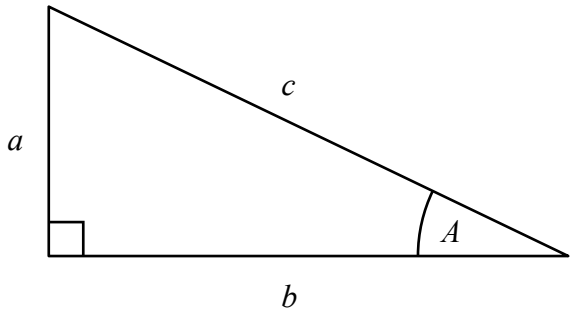
Volume of a prism = area of cross section × length

Where r is the radius and d is the diameter:

Circumference of a circle = $2\pi r = \pi d$

Area of a circle = πr^2

Pythagoras' Theorem and Trigonometry



In any right-angled triangle where a, b and c are the length of the sides and c is the hypotenuse:

$a^2 + b^2 = c^2$

In any right-angled triangle ABC where a, b and c are the length of the sides and c is the hypotenuse:

$\sin A = \frac{a}{c} \quad \cos A = \frac{b}{c} \quad \tan A = \frac{a}{b}$

Compound Interest

Where P is the principal amount, r is the interest rate over a given period and n is number of times that the interest is compounded:

Total accrued = $P\left(1 + \frac{r}{100}\right)^n$

Probability

Where P (A) is the probability of outcome A and P (B) is the probability of outcome B:

P (A or B) = P (A) + P (B) – P (A and B)

Higher Tier Formulae Sheet

Perimeter, area and volume

Where a and b are the lengths of the parallel sides and h is their perpendicular separation:

Area of a trapezium = $\frac{1}{2}(a + b)h$

Volume of a prism = area of cross section × length

Where r is the radius and d is the diameter:

Circumference of a circle = $2\pi r = \pi d$

Area of a circle = πr^2

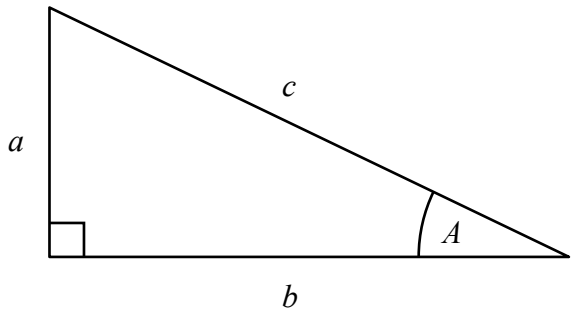
Quadratic formula

The solution of $ax^2 + bx + c = 0$

where $a \neq 0$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Pythagoras' Theorem and Trigonometry

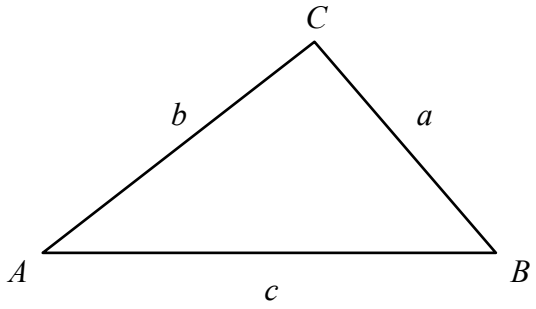


In any right-angled triangle where a, b and c are the length of the sides and c is the hypotenuse:

$a^2 + b^2 = c^2$

In any right-angled triangle ABC where a, b and c are the length of the sides and c is the hypotenuse:

$$\sin A = \frac{a}{c} \quad \cos A = \frac{b}{c} \quad \tan A = \frac{a}{b}$$



In any triangle ABC where a, b and c are the length of the sides:

sine rule: $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

cosine rule: $a^2 = b^2 + c^2 - 2bc \cos A$

Area of triangle = $\frac{1}{2} a b \sin C$

Compound Interest

Where P is the principal amount, r is the interest rate over a given period and n is number of times that the interest is compounded:

Total accrued = $P\left(1 + \frac{r}{100}\right)^n$

Probability

Where P (A) is the probability of outcome A and P (B) is the probability of outcome B:

P (A or B) = P (A) + P (B) – P (A and B)

P (A and B) = P (A given B) P(B)

END OF ADVANCE INFORMATION