Pearson Edexcel

International GCSE

Mathematics (Specification A) (9–1) (Modular)

Specification

Pearson Edexcel International GCSE in Mathematics (Specification A) (Modular) (4XMAF/4XMAH)

First teaching September 2024
First examination June 2025
First certification August 2025

Issue 2

About Pearson

We are the world's leading learning company operating in countries all around the world. We provide content, assessment and digital services to learners, educational institutions, employers, governments and other partners globally. We are committed to helping equip learners with the skills they need to enhance their employability prospects and to succeed in the changing world of work. We believe that wherever learning flourishes so do people.

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All information in this specification is correct at time of publication.

Publication code: GQ000029

Summary of Pearson Edexcel International GCSE in Mathematics (Specification A) (Modular) Issue 2 changes

Summary of changes made between previous issue and this current issue	Page number
Sections *Unit results* and *Qualification results* now show the total UMS marks for each unit, the qualification as a whole and the associated grade boundaries.	48

If you need further information on these changes or what they mean, contact us via our website at: qualifications.pearson.com/en/support/contact-us.html.

Contents

1 About this specification

Pearson Edexcel International GCSE in Mathematics (Specification A) (Modular) is part of a suite of International GCSE (Modular) qualifications offered by Pearson.

This qualification is not accredited or regulated by any UK regulatory body.

This specification includes the following key features.

Structure

Pearson Edexcel International GCSE in Mathematics (Specification A) (Modular) is a modular qualification available at Foundation and Higher Tier. All units are available in the June and November exam series. We strongly advise that Units 1 and 2 are sat in order for first entry of the units, and resits can be sat in any order. A relevant cash-in code must be used to obtain an overall grade for the qualification: 4XMAF for Foundation Tier, and 4XMAH for Higher Tier.

Content

The content is relevant, engaging, up-to-date and of equivalent standard to Pearson's regulated GCSE in Mathematics.

Assessment

Two tiers of entry are available: Foundation and Higher (content is defined for each tier) and each tier comprises of two written unit assessments. This allows learners to be entered for the appropriate level, with questions designed to be accessible to learners of all abilities in that tier and unit assessments that are balanced for topics and difficulty. All assessments in the modular route are designed to be at the same standard, and there is no step up in difficulty between Unit 1 and Unit 2.

Approach

It is a solid basis for learners wishing to progress to Pearson Edexcel International Advanced Level, AS and Advanced GCE Level, or equivalent qualifications.

Specification updates

This specification is Issue 1 and is valid for first teaching from September 2024, with first assessment from June 2025, first cash-in in June 2025 and first certification from August 2025. If there are any significant changes to the specification, we will inform centres in writing. Changes will also be posted on our website.

For more information, please visit qualifications.pearson.com.

Using this specification

This specification gives teachers guidance and encourages effective delivery of the qualification. The following information will help you get the most out of the content and guidance.

Content: arranged according to individual units within each tier: Foundation and Higher, as summarised in *Section 3: Mathematics (Specification A) (Modular) content*.

Examples: we have included examples to show content statements to support teaching and learning. It is important to note that these examples are for illustrative purposes only and centres can use other examples. We have included examples that are easily understood and recognised by international centres.

Assessments: use a range of material and are not limited to the examples given. Teachers should deliver the qualification using a good range of examples to support the assessment of the content.

Depth and breadth of content: teachers should use the full range of content and all the assessment objectives provided in *Section 3: Mathematics (Specification A) (Modular) content.*

Qualification aims

The aims of this qualification are to enable learners to:

- develop their knowledge and understanding of mathematical concepts and techniques
- acquire a foundation of mathematical skills for further study in the subject or related areas
- enjoy using and applying mathematical techniques and concepts, and become confident in using mathematics to solve problems
- appreciate the importance of mathematics in study, employment and society.

Why choose Pearson Edexcel qualifications?

Pearson – the world's largest education company

Edexcel academic qualifications are from Pearson, the UK's largest awarding organisation. With over 3.4 million learners studying our academic and vocational qualifications worldwide, we offer internationally recognised qualifications to schools, colleges and employers globally.

Pearson is recognised as the world's largest education company. This allows us to drive innovation and provide comprehensive support for Pearson Edexcel learners in acquiring the knowledge and skills they need for progression in study, work and life.

A heritage you can trust

The background to Pearson becoming the UK's largest awarding organisation began in 1836, when a royal charter gave the University of London its first powers to conduct exams and confer degrees on its learners. With over 150 years of international education experience, Edexcel qualifications have firm academic foundations, built on the traditions and rigour associated with Britain's educational system.

Results you can trust

Pearson's leading online marking technology has been shown to produce exceptionally reliable results, demonstrating that, at every stage, Pearson Edexcel qualifications maintain the highest standards.

Why choose Pearson Edexcel International GCSE in Mathematics (Specification A) (Modular)?

We have listened to feedback from all parts of the international school and language teaching community, including a large number of teachers. We have created a qualification that will engage international learners and give them skills that will support progression to further study of mathematics and to enhance future educational or employment prospects.

The content and assessment approach for this qualification has been designed to maintain the rigorous standards of all Pearson Edexcel qualifications and meet learner needs in the following ways.

Modular structure

The modular assessment structure offers learners the flexibility to sit examinations when they are ready and provides opportunities to resit individual unit assessments before receiving an overall qualification grade.

Two-unit assessment

The modular approach retains the same content as the existing linear specification but splits the content across the two units and tiers. Both Unit 1 and Unit 2 will cover topic areas from Number, Algebra, Shape, space and measure and Handling data.

Tiered papers

Provided at two tiers of entry: Foundation and Higher. This allows learners to be entered for a level appropriate to them, with questions in each tier that are accessible to learners of all abilities within that tier.

Clear and straightforward question papers

Our question papers are clear and accessible for learners of all ability ranges. A range of question types will be used. Our mark schemes are straightforward so that the assessment requirements are clear.

Broad and deep development of skills

The design of this International GCSE (Modular) aims to extend learners' knowledge by broadening and deepening skills; for example, learners will:

- develop their problem-solving skills by translating problems in mathematical or non-mathematical contexts at both Higher and Foundation tiers
- develop reasoning skills through exercises such as presenting arguments and proofs, as well as making deductions and drawing conclusions from mathematical information.

Progression

International GCSE (Modular) qualifications enable successful progression to Level 3 qualifications (such as the International A Level in Mathematics) and beyond, in mathematics and other subjects. We have consulted with International A Level and GCE A Level teachers, as well as higher education professionals to validate this qualification, including content, skills and assessment structure.

Supporting you in planning and implementing this qualification

Planning

- Our *Getting Started Guide* gives you an overview of the Pearson Edexcel International GCSE in Mathematics (Specification A) (Modular) to help you understand the content and assessment, and what this means for you and your learners.
- We will provide you with an editable scheme of work and course planner for each qualification offering a modular route, enabling you to adapt these resources to suit your needs.

Teaching and learning

- Our skills maps will highlight opportunities for learners to develop skills that are directly and indirectly assessed.
- Print and digital learning and teaching resources promote any time, any place learning to improve learners' motivation and encourage new ways of working. These will be mapped to our modular schemes of work to ensure this qualification is fully supported.

Preparing for exams

We will also provide you with a range of resources to help you prepare your learners for the assessments, including:

- past papers for the qualification's linear counterpart to use as lesson resources or for mock examinations
- examiner reports with learner responses and examiner commentaries following each examination series.

ResultsPlus

ResultsPlus provides the most detailed analysis available of your learners' exam performance. It can help you identify the topics and skills where further learning would benefit your learners.

examWizard

This is an included online resource designed to support learners and teachers with examination preparation and assessment.

Training events

In addition to online training, we host a series of training events for teachers to deepen their understanding of our qualifications.

Get help and support

Our subject advisor ensures that you receive help and guidance from us. You can email our subject advisor at TeachingMaths@pearson.com. You can also sign up to receive subject advisor updates or contact us using our support portal.

2 Qualification at a glance

Qualification overview

Pearson Edexcel International GCSE in Mathematics (Specification A) (Modular) consists of two mandatory units.

It is a modular qualification where we strongly advise that unit assessments are sat in order for first entry of the units, and resists can be sat in any order. Assessments must be cashed in to obtain a final grade for the qualification.

Content and assessment overview

<table>
<tr><td>Unit 1 and Unit 2 Foundation Tier</td><td>*Unit codes:
Unit 1: 4WM1F/01
Unit 2: 4WM2F/01</td></tr>
<tr><td>Externally assessed
Written examination: 2 hours for each unit assessment
June and November
100 marks for each unit assessment</td><td>Each unit assessment is 50% of the total International GCSE (Modular)</td></tr>
<tr><td colspan="2">Content overview
Number
Algebra
Geometry
Statistics
For more detail under these key content areas, please see Modular content summary.</td></tr>
<tr><td colspan="2">Assessment overview
Each unit will assess the full range of targeted grades at Foundation Tier (5–1).
Each unit has approximately equal marks available for each of the targeted grades.
Approximately 40% of common questions targeted at grades 5 and 4 appear across Unit 1 assessment at Foundation Tier and Unit 1 assessment at Higher Tier, as well as across Unit 2 assessment at Foundation Tier and Unit 2 assessment at Higher Tier to aid standardisation and comparability of award between tiers.
Knowledge of the Foundation Tier Unit 1 content is assumed for learners being prepared for Foundation Tier Unit 2.
A Foundation Tier formulae sheet (Appendix 3) will be included in the written examinations.
Calculators may be used in the examinations (please see Section 4: Assessment information Calculators for further information).</td></tr>
</table>

* See *Appendix 1: Codes* for a description of these codes and all the other codes relevant to this qualification.

Unit 1 and Unit 2 Higher Tier	*Unit codes: Unit 1: 4WM1H/01 Unit 2: 4WM2H/01
Externally assessed Written examination: 2 hours for each unit assessment June and November 100 marks for each unit assessment	Each unit assessment is 50% of the total International GCSE (Modular)
Content overview • Number • Algebra • Geometry • Statistics For more detail under these key content areas, please see *Modular content summary*.	
Assessment overview Each unit will assess the full range of targeted grades at Higher Tier (9–4, with an allowable grade 3). Each unit has approximately equal marks available for each of the targeted grades. Approximately 40% of common questions targeted at grades 5 and 4 appear across Unit 1 assessment at Foundation Tier and Unit 1 assessment at Higher Tier, as well as across Unit 2 assessment at Foundation Tier and Unit 2 assessment at Higher Tier to aid standardisation and comparability of award between tiers. Knowledge of the Foundation Tier Unit 1 content is assumed for learners being prepared for Foundation Tier Unit 2 or Higher Tier Unit 2. Knowledge of the Higher Tier Unit 1 content is assumed for learners being prepared for Higher Tier Unit 2. A Higher Tier formulae sheet (*Appendix 4*) will be included in the written examinations. Calculators may be used in the examinations (please see *Section 4: Assessment information Calculators* for further information).	

* See *Appendix 1: Codes* for a description of these codes and all the other codes relevant to this qualification.

Modular content summary

The table below shows the topic areas that are covered in each unit for the Foundation (**F**) and Higher (**H**) Tier across the key content areas: Number, Algebra, Shape, space and measure and Handling data.

Unit 1			**Unit 2**		
Number (AO1)	**F**	**H**	**Number (AO1)**	**F**	**H**
Basic number skills	✓	✓	Ratio and proportion	✓	✓
Limits of accuracy	✓	✓	Percentage skills	✓	✓
Surds and indices	×	✓	Standard form	✓	✓
			Repeated percentage change	×	✓
Algebra (AO1)	**F**	**H**	**Algebra (AO1)**	**F**	**H**
Basic algebra skills	✓	✓	Inequalities	✓	✓
Set notation	✓	✓	Simultaneous equations	✓	✓
Plotting graphs	✓	✓	Sequences	✓	✓
Solving basic quadratics $x^2 + bx + c = 0$	✓	✓	Change of subject	✓	✓
Solving quadratics $ax^2 + bx + c = 0$	×	✓	Algebraic proof	×	✓
Completing the square	×	✓	Direct and inverse proportion	×	✓
The quadratic formula	×	✓	Summation of arithmetic series	×	✓
			Function notation and transformations	×	✓
			Differentiation	×	✓
Shape, space and measure (AO2)	**F**	**H**	**Shape, space and measure (AO2)**	**F**	**H**
Properties and areas of shapes	✓	✓	Angles in polygons and circles	✓	✓
Trigonometry	✓	✓	Symmetry	✓	✓
Pythagoras' theorem	✓	✓	Constructions	✓	✓
Compound measures (speed, density)	✓	✓	Volume	✓	✓
Sine and Cosine rule	×	✓	Similarity	✓	✓
Sine area of a triangle	×	✓	Transformations	✓	✓
3D Pythagoras' theorem	×	✓	Circle theorems	×	✓
			Similar area and volume	×	✓
			Vectors	×	✓
Handling data (AO3)	**F**	**H**	**Handling data (AO3)**	**F**	**H**
Basic probability	✓	✓	Statistical measures	✓	✓
Tree diagrams	×	✓	Cumulative frequency diagrams	×	✓
Conditional probability	×	✓			
Histograms	×	✓			

3 Mathematics (Specification A) (Modular) content

Foundation Tier

Externally assessed

Description

The Pearson Edexcel International GCSE in Mathematics (Specification A) (Modular) requires learners to demonstrate application and understanding of the following.

Number

- Use numerical skills in a purely mathematical way and in real-life situations.

Algebra

- Use letters as equivalent to numbers and as variables.
- Understand the distinction between expressions, equations and formulae.
- Use algebra to set up and solve problems.
- Demonstrate manipulation skills.
- Construct and use graphs.

Geometry

- Use properties of angles.
- Understand a range of transformations.
- Work within the metric system.
- Understand ideas of space and shape.
- Use ruler, a pair of compasses and protractor appropriately.

Statistics

- Understand basic ideas of statistical averages.
- Use a range of statistical techniques.
- Use basic ideas of probability.

Learners should be able to use and apply **standard mathematical techniques** by accurately recalling facts, terminology and definitions; using and interpreting notation correctly; and accurately carrying out routine procedures or set tasks that require multi-step solutions.

Learners should be able to demonstrate **problem-solving skills** by translating problems in mathematical or non-mathematical contexts into a process or a series of mathematical processes.

Learners should be able to demonstrate **mathematical reasoning skills** by:

- making deductions and drawing conclusions from mathematical information
- constructing chains of reasoning
- presenting arguments and proofs
- interpreting and communicating information accurately.

Higher Tier

Externally assessed

Knowledge of the Foundation Tier Unit 1 content is assumed for learners being prepared for Foundation Tier Unit 2 or Higher Tier Unit 2. Knowledge of the Higher Tier Unit 1 content is assumed for learners being prepared for Higher Tier Unit 2.

Description

Pearson Edexcel International GCSE in Mathematics (Specification A) (Modular) requires learners to demonstrate application and understanding of the following:

Number

- Use numerical skills in a purely mathematical way and in real-life situations.

Algebra

- Use letters as equivalent to numbers and as variables.
- Understand the distinction between expressions, equations and formulae.
- Use algebra to set up and solve problems.
- Demonstrate manipulation skills.
- Construct and use graphs.

Geometry

- Use the properties of angles.
- Understand a range of transformations.
- Work within the metric system.
- Understand ideas of space and shape.
- Use ruler, a pair of compasses and protractor appropriately.

Statistics

- Understand basic ideas of statistical averages.
- Use a range of statistical techniques.
- Use basic ideas of probability.

Learners should be able to use and apply **standard mathematical techniques** by accurately recalling facts, terminology and definitions; using and interpreting notation correctly; and accurately carrying out routine procedures or set tasks that require multi-step solutions.

Learners should also be able to demonstrate **problem-solving skills** by translating problems in mathematical or non-mathematical contexts into a process or a series of mathematical processes.

Learners should be able to demonstrate **mathematical reasoning skills** by:

- making deductions and drawing conclusions from mathematical information
- constructing chains of reasoning
- presenting arguments and proofs
- interpreting and communicating information accurately.

Unit 1: Foundation Tier

Specification points have been selected for Unit 1 Foundation Tier from the overall body of subject content from the International GCSE in Mathematics (Specification A) (4MA1) linear qualification. At unit level, the specification points will not necessarily be presented sequentially.

International GCSE in Mathematics A (Modular) specification content mapping document details the breakdown of the subject content for each unit at each tier, in relation to the International GCSE in Mathematics (Specification A) (4MA1) linear qualification. It can be accessed from the Pearson Qualifications webpage from *Course materials: Specification and sample assessments*.

AO1 Numbers and algebra

1 Numbers and the number system

What learners need to study:		Notes
1.1 Integers	**A** understand and use integers (positive, negative and zero)	
	B understand place value	
	C use directed numbers in practical situations	e.g. temperatures
	D order integers	
	E use the four rules of addition, subtraction, multiplication and division	
	F use brackets and the hierarchy of operations	
	G use the terms 'odd', 'even', 'prime numbers', 'factors' and 'multiples'	
	H identify prime factors, common factors and common multiples	
1.2 Fractions	**A** understand and use equivalent fractions, simplifying a fraction by cancelling common factors	$\frac{8}{60}=\frac{2}{15}$ in its simplest form (lowest terms)
	B understand and use mixed numbers and vulgar fractions	
	C identify common denominators	
	D order fractions and calculate a given fraction of a given quantity	
	E express a given number as a fraction of another number	
	F use common denominators to add and subtract fractions and mixed numbers	$\frac{2}{3}+\frac{5}{7}$, $3\frac{1}{5}-2\frac{2}{3}$

What learners need to study:		Notes
	G convert a fraction to a decimal or a percentage	$\frac{3}{5} = 0.6 = 60\%$ $\frac{4}{9} = 0.4444... = 44.4...\%$
	H understand and use unit fractions as multiplicative inverses	$3 \div 5 = 3 \times \frac{1}{5}$
	I multiply and divide fractions and mixed numbers	$\frac{2}{3} \times \frac{5}{7}, \quad 3\frac{1}{5} \div 2\frac{2}{3}$
1.3 Decimals	**A** use decimal notation	
	B understand place value	
	C order decimals	
	D convert a decimal to a fraction or a percentage	Terminating decimals only
	E recognise that a terminating decimal is a fraction	$0.65 = \frac{65}{100} = \frac{13}{20}$
1.4 Powers and roots	**A** identify square numbers and cube numbers	
	B calculate squares, square roots, cubes and cube roots	
	C use index notation and index laws for multiplication and division of positive and negative integer powers including zero	
1.5 Set language and notation	**A** understand the definition of a set	
	B use the set notation $\cup$, $\cap$ and $\in$ and $\notin$	
	C understand the concept of the universal set and the empty set and the symbols for these sets	$\mathscr{E}$ = universal set $\varnothing$ = empty set
	D understand and use the complement of a set	Use the notation A'
	E use Venn diagrams to represent sets	
1.6 Percentages	**A** understand that 'percentage' means 'number of parts per 100'	
	B express a given number as a percentage of another number	
	C express a percentage as a fraction and as a decimal	

What learners need to study:		Notes
1.8 Degree of accuracy	**A** round integers to a given power of 10	
	B round to a given number of significant figures or decimal places	
	C identify upper and lower bounds where values are given to a degree of accuracy	
	D use estimation to evaluate approximations to numerical calculations	By rounding values to 1 significant figure
1.10 Applying number	**A** use and apply number in everyday personal, domestic or community life	
	B carry out calculations using standard units of mass, length, area, volume and capacity	Metric units only
	C understand and carry out calculations using time, and carry out calculations using money, including converting between currencies	
1.11 Electronic calculators	**A** use a scientific electronic calculator to determine numerical results	

2 Equations, formulae and identities

What learners need to study:		Notes
2.1 Use of symbols	**A** understand that symbols may be used to represent numbers in equations or variables in expressions and formulae	
	B understand that algebraic expressions follow the generalised rules of arithmetic	
	C use index notation for positive and negative integer powers (including zero)	$a \times a \times a = a^3$ $a^{-5} = \frac{1}{a^5}$; $a^0 = 1$
	D use index laws in simple cases	$x^m \times x^n = x^{m+n}$ $x^m \div x^n = x^{m-n}$ $(x^m)^n = x^{mn}$
2.2 Algebraic manipulation	**A** evaluate expressions by substituting numerical values for letters	
	B collect like terms	
	C multiply a single term over a bracket	$3x(2x+5)$
	D take out common factors	Factorise fully $8xy + 12y^2$
	E expand the product of two simple linear expressions	Expand and simplify $(x+8)(x-5)$
	F understand the concept of a quadratic expression and be able to factorise such expressions (limited to $x^2 + bx + c$)	Factorise $x^2 + 10x + 24$
2.4 Linear equations	**A** solve linear equations, with integer or fractional coefficients, in one unknown in which the unknown appears on either side or both sides of the equation	$5x + 8 = 12$ $7(x+3) = 5x - 8$ $\frac{4x+5}{2} = 3$
	B set up simple linear equations from given data	The three angles of a triangle are $a°$, $(a + 10)°$, $(a + 20)°$. Find the value of a
2.7 Quadratic equations	**A** solve quadratic equations by factorisation (limited to $x^2 + bx + c = 0$)	Solve $x^2 + x - 30 = 0$

3 Sequences, functions and graphs

What learners need to study:		Notes
3.3 Graphs	**A** interpret information presented in a range of linear and non-linear graphs	To include speed/time and distance/time graphs
	B understand and use conventions for rectangular Cartesian coordinates	
	C plot points (x, y) in any of the four quadrants or locate points with given coordinates	
	D determine the coordinates of points identified by geometrical information	
	E determine the coordinates of the midpoint of a line segment, given the coordinates of the two end points	
	F draw and interpret straight line conversion graphs	To include currency conversion graphs
	G find the gradient of a straight line	gradient = (increase in y) ÷ (increase in x)
	H recognise that equations of the form $y = mx + c$ are straight line graphs with gradient m and intercept on the y-axis at the point $(0, c)$	Write down the gradient and coordinates of the y intercept of $y = 3x + 5$; Write down the equation of the straight line with gradient 6 that passes through the point (0, 2)
	I recognise, generate points and plot graphs of linear and quadratic functions	To include $x = k$, $y = c$, $y = x$, $y - x = 0$ Including completion of values in tables and equations of the form $ax + by = c$

AO2 Shape, space and measure

4 Geometry

What learners need to study:		Notes
4.1 Angles, lines and triangles	**A** distinguish between acute, obtuse, reflex and right angles	
	B use angle properties of intersecting lines, parallel lines and angles on a straight line	Angles at a point, vertically opposite angles, alternate angles, corresponding angles, allied angles
	C understand the exterior angle of a triangle property and the angle sum of a triangle property	
	D understand the terms 'isosceles', 'equilateral' and 'right-angled triangles' and the angle properties of these triangles	
4.2 Polygons	**A** recognise and give the names of polygons	To include parallelogram, rectangle, square, rhombus, trapezium, kite, pentagon, hexagon and octagon
	B understand and use the term 'quadrilateral' and the angle sum property of quadrilaterals	The four angles of a quadrilateral are $90°$, $(x + 15)°$, $(x + 25)°$ and $(x + 35)°$ Find the value of x
	C understand and use the properties of the parallelogram, rectangle, square, rhombus, trapezium and kite	
4.4 Measures	**F** understand and use the relationship between average speed, distance and time	
	G use compound measure such as speed, density and pressure	Formula for pressure will be given
4.7 Geometrical reasoning	**A** give informal reasons, where required, when arriving at numerical solutions to geometrical problems	Reasons will only be required for geometrical calculations based on lines (including chords and tangents), triangles or polygons

What learners need to study:		Notes
4.8 Trigonometry and Pythagoras' theorem	**A** know, understand and use Pythagoras' theorem in two dimensions	
	B know, understand and use sine, cosine and tangent of acute angles to determine lengths and angles of a right-angled triangle	
	C apply trigonometrical methods to solve problems in two dimensions	
4.9 Mensuration of 2D shapes	**A** convert measurements within the metric system to include linear and area units	e.g. cm^2 to m^2 and vice versa
	B find the perimeter of shapes made from triangles and rectangles	
	C find the area of simple shapes using the formulae for the areas of triangles and rectangles	
	D find the area of parallelograms and trapezia	
	E find circumferences and areas of circles using relevant formulae; find perimeters and areas of semicircles	
4.10 3D shapes and volume	**A** recognise and give the names of solids	To include cube, cuboid, prism, pyramid, cylinder, sphere and cone
	B understand the terms 'face', 'edge' and 'vertex' in the context of 3D solids	

AO3 Handling data

6 Statistics and probability

What learners need to study:		Notes
6.1 Graphical representation of data	**A(i)** use different methods of presenting data	two-way tables
6.3 Probability	**A** understand the language of probability	Outcomes, equal likelihood, events, random
	B understand and use the probability scale	$\mathrm{P}(\text{certainty}) = 1$ $\mathrm{P}(\text{impossibility}) = 0$
	C understand and use estimates or measures of probability from theoretical models	
	D find probabilities from a Venn diagram	
	E understand the concepts of a sample space and an event, and how the probability of an event happening can be determined from the sample space	For the tossing of two coins, the sample space can be listed as: Heads (H), Tails (T): (H, H), (H, T), (T, H), (T, T)
	F list all the outcomes for single events and for two successive events in a systematic way	
	G estimate probabilities from previously collected data	
	H calculate the probability of the complement of an event happening	$\mathrm{P}(A') = 1 - \mathrm{P}(A)$
	I use the addition rule of probability for mutually exclusive events	$\mathrm{P}(\text{either } A \text{ or } B \text{ occurring}) = \mathrm{P}(A) + \mathrm{P}(B)$ when A and B are mutually exclusive
	J understand and use the term 'expected frequency'	Determine an estimate of the number of times an event with a probability of 0.4 will happen over 300 tries

Unit 1: Higher Tier

Questions will assume knowledge from Unit 1 Foundation Tier subject content.

Specification points have been selected for Unit 1 Higher Tier from the overall body of subject content from the International GCSE in Mathematics (Specification A) (4MA1) linear qualification. At unit level, the specification points will not necessarily be presented sequentially.

International GCSE in Mathematics A (Modular) specification content mapping document details the breakdown of the subject content for each unit at each tier, in relation to the International GCSE in Mathematics (Specification A) (4MA1) linear qualification. It can be accessed from the Pearson Qualifications webpage from *Course materials: Specification and sample assessments*.

AO1 Numbers and algebra

1 Numbers and the number system

What learners need to study:			Notes
1.3 Decimals	**A**	convert recurring decimals into fractions	$0.3\dot{2} = 0.322... = \frac{29}{90}$
1.4 Powers and roots	**A**	understand the meaning of surds	Simplify: $\sqrt{8} + 3\sqrt{32}$
	B	manipulate surds, including rationalising a denominator	Express in the form $a + b\sqrt{2} : (3 + 5\sqrt{2})^2$ Rationalise: $\frac{2}{\sqrt{8}}; \frac{1}{2-\sqrt{3}}$
	C	use index laws to simplify and evaluate numerical expressions involving integer, fractional and negative powers	Evaluate: $\sqrt[3]{8^2}$, $625^{-\frac{1}{2}}$, $\left(\frac{1}{25}\right)^{\frac{3}{2}}$
1.5 Set language and notation	**A**	understand sets defined in algebraic terms, and understand and use subsets	If A is a subset of B, then $A \subset B$
	B	use Venn diagrams to represent sets and the number of elements in sets	
	C	use the notation $\mathrm{n}(A)$ for the number of elements in the set A	
	D	use sets in practical situations	
1.8 Degree of accuracy	**A**	solve problems using upper and lower bounds where values are given to a degree of accuracy	The dimensions of a rectangle are 12 cm and 8 cm to the nearest cm Calculate, to 3 significant figures, the smallest possible area as a percentage of the largest possible area

2 Equations, formulae and identities

What learners need to study:			Notes
2.1 Use of symbols	**A**	use index notation involving fractional, negative and zero powers	
2.2 Algebraic manipulation	**A**	expand the product of two or more linear expressions	Expand and simplify $(x + 2)(x + 3)(x - 1)$
	B	understand the concept of a quadratic expression and be able to factorise such expressions	Factorise $6x^2 - 5x - 6$
	C	manipulate algebraic fractions where the numerator and/or the denominator can be numeric, linear or quadratic	Express as a single fraction $\frac{3x+1}{x+2} - \frac{x-2}{x-1}$ Simplify $\frac{2x^2+3x}{4x^2-9}$
	D	complete the square for a given quadratic expression	Write $2x^2 + 6x - 1$ in the form $a(x + b)^2 + c$
2.7 Quadratic equations	**A**	solve quadratic equations by factorisation	$2x^2 - 3x + 1 = 0$, $x(3x - 2) = 5$
	B	solve quadratic equations by using the quadratic formula or completing the square	
	C	form and solve quadratic equations from data given in a context	

3 Sequences, functions and graphs

What learners need to study:		Notes
3.3 Graphs	**A** recognise, plot and draw graphs with equation: $y = Ax^3 + Bx^2 + Cx + D$ in which: (i) the constants are integers and some could be zero (ii) the letters x and y can be replaced with any other two letters or: $y = Ax^3 + Bx^2 + Cx + D + \frac{E}{x} + \frac{F}{x^2}$ in which: (i) the constants are numerical and at least three of them are zero (ii) the letters x and y can be replaced with any other two letters $y = \sin x, y = \cos x, y = \tan x$ for angles of any size (in degrees)	$y = x^3$ $y = 3x^3 - 2x^2 + 5x - 4$ $y = 2x^3 - 6x + 2$ $V = 60w(60 - w)$ $y = \frac{1}{x}, x \neq 0,$ $y = 2x^2 + 3x + \frac{1}{x}, x \neq 0,$ $y = \frac{1}{x}(3x^2 - 5), x \neq 0,$ $w = \frac{5}{d^2}, d \neq 0$
	F calculate the gradient of a straight line given the coordinates of two points	Find the equation of the straight line through (1, 7) and (2, 9)
	G find the equation of a straight line parallel to a given line; find the equation of a straight line perpendicular to a given line	Find the equation of the line perpendicular to $y = 2x + 5$ through the point (3, 7)

AO2 Shape, space and measure

4 Geometry

What learners need to study:			Notes
4.7 Geometrical reasoning	**A**	provide reasons, using standard geometrical statements, to support numerical values for angles obtained in any geometrical context involving lines, polygons and circles	
4.8 Trigonometry and Pythagoras' theorem	**A**	understand and use sine, cosine and tangent of obtuse angles	
	B	understand and use angles of elevation and depression	
	C	understand and use the sine and cosine rules for any triangle	
	D	use Pythagoras' theorem in three dimensions	
	E	understand and use the formula $\frac{1}{2}ab\sin C$ for the area of a triangle	
	F	apply trigonometrical methods to solve problems in three dimensions, including finding the angle between a line and a plane	The angle between two planes will not be required
4.9 Mensuration	**A**	find perimeters and areas of sectors of circles	Radian measure is excluded

AO3 Handling data

6 Statistics and probability

What learners need to study:			Notes
6.1 Graphical representation of data	**A**	construct and interpret histograms	For continuous variables with unequal class intervals
6.3 Probability	**A**	draw and use tree diagrams	
	B	determine the probability that two or more independent events will occur	
	C	use simple conditional probability when combining events	Picking two balls out of a bag, one after the other, without replacement
	D	apply probability to simple problems	

Unit 2: Foundation Tier

Questions will assume knowledge from Unit 1 Foundation Tier subject content.

Specification points have been selected for Unit 2 Foundation Tier from the overall body of subject content from the International GCSE in Mathematics (Specification A) (4MA1) linear qualification. At unit level, the specification points will not necessarily be presented sequentially.

International GCSE in Mathematics A (Modular) specification content mapping document details the breakdown of the subject content for each unit at each tier, in relation to the International GCSE in Mathematics (Specification A) (4MA1) linear qualification. It can be accessed from the Pearson Qualifications webpage from *Course materials: Specification and sample assessments*.

AO1 Numbers and algebra

1 Numbers and the number system

What learners need to study:		Notes
1.4 Powers and roots	**D** express integers as a product of powers of prime factors	$720 = 2^4 \times 3^2 \times 5$
	E find highest common factors (HCF) and lowest common multiples (LCM)	
1.6 Percentages	**D** understand the multiplicative nature of percentages as operators	$15\% \text{ of } 120 = \frac{15}{100} \times 120$
	E solve simple percentage problems, including percentage increase and decrease	
	F use reverse percentages	In a sale, prices were reduced by 30%. The sale price of an item was $£17.50$ Calculate the original price of the item
	G use compound interest and depreciation	
1.7 Ratio and proportion	**A** use ratio notation, including reduction to its simplest form and its various links to fraction notation	Express in the form $1 : n$
	B divide a quantity in a given ratio or ratios	Share $£416$ in the ratio $5 : 3$ or $4 : 3 : 1$
	C use the process of proportionality to evaluate unknown quantities	
	D calculate an unknown quantity from quantities that vary in direct proportion	s varies directly as t Find the missing value in a table
	E solve word problems about ratio and proportion	Including maps and scale diagrams

What learners need to study:		Notes
1.9 Standard form	**A** calculate with and interpret numbers in the form $a \times 10^n$ where n is an integer and $1 \leqslant a < 10$	$150\,000\,000 = 1.5 \times 10^8$

2 Equations, formulae and identities

What learners need to study:			Notes
2.3 Expressions and formulae	**A**	understand that a letter may represent an unknown number or a variable	
	B	use correct notational conventions for algebraic expressions and formulae	
	C	substitute positive and negative integers, decimals and fractions for words and letters in expressions and formulae	Evaluate $2x - 3y$ when $x = 4$ and $y = -5$
	D	use formulae from mathematics and other real-life contexts expressed initially in words or diagrammatic form and convert to letters and symbols	
	E	derive a formula or expression	
	F	change the subject of a formula where the subject appears once	Make r the subject of $A = \pi r^2$ Make t the subject of $v = u + at$
2.6 Simultaneous linear equations	**A**	calculate the exact solution of two simultaneous equations in two unknowns	$x + y = 14, x - y = 2$ $2a + 5b = 12,$ $3a + b = 5$
2.8 Inequalities	**A**	understand and use the symbols $>, <, \geqslant$ and $\leqslant$	To include double- ended inequalities e.g. $1 < x \leqslant 5$
	B	understand and use the convention for open and closed intervals on a number line	
	C	solve simple linear inequalities in one variable and represent the solution set on a number line	$3x - 2 < 10$, so $x < 4$ $7 - x \leqslant 5$, so $x \geqslant 2$ $3 < x + 2 \leqslant 5$ so $1 < x \leqslant 3$
	D	represent simple linear inequalities on rectangular Cartesian graphs	Shade the region defined by the inequalities $x \leqslant 0$, $y \leqslant 1, x + y \leqslant 5$
	E	identify regions on rectangular Cartesian graphs defined by simple linear inequalities	Conventions for the inclusion of boundaries are not required

3 Sequences, functions and graphs

What learners need to study:		Notes
3.1 Sequences	**A** generate terms of a sequence using term-to-term and position-to-term definitions of the sequence	Including odd, even, squares, multiples and powers
	B find subsequent terms of an integer sequence and the rule for generating it	$5, 9, 13, 17, \ldots$ (add 4) $1, 2, 4, 8, \ldots$ (multiply by 2)
	C use linear expressions to describe the nth term of arithmetic sequences	$1, 3, 5, 7, 9, \ldots$ nth term is $2n - 1$ nth term is $4n + 3$, write down the first 3 terms of the sequence

AO2 Shape, space and measure

4 Geometry

What learners need to study:		Notes
4.2 Polygons	**D** understand the term 'regular polygon' and calculate interior and exterior angles of regular polygons	
	E understand and use the angle sum of polygons	For a polygon with n sides, the sum of the interior angles is $(2n-4)$ right angles
	F understand congruence as meaning the same shape and size	
	G understand that two or more polygons with the same shape and size are said to be congruent to each other	
4.3 Symmetry	**A** identify any lines of symmetry and the order of rotational symmetry of a given two-dimensional figure	Name a quadrilateral with no lines of symmetry and order of rotational symmetry of 2
4.4 Measures	**A** interpret scales on a range of measuring instruments	
	B calculate time intervals in terms of the 24-hour and the 12-hour clock	Use am and pm
	C make sensible estimates of a range of measures	
	D understand angle measure including three-figure bearings	
	E measure an angle to the nearest degree	
4.5 Construction	**A** measure and draw lines to the nearest millimetre	
	B construct triangles and other two-dimensional shapes using a combination of a ruler, a protractor and a pair of compasses	
	C solve problems using scale drawings	
	D use straight edge and a pair of compasses to: (i) construct the perpendicular bisector of a line segment (ii) construct the bisector of an angle	

What learners need to study:		Notes
4.6 Circle properties	**A** recognise the terms 'centre', 'radius', 'chord', 'diameter', 'circumference', 'tangent', 'arc', 'sector' and 'segment' of a circle	
	B understand chord and tangent properties of circles	Two tangents from a point to a circle are equal in length Tangents are perpendicular to the radius at the point of contact The line from the centre of a circle which is perpendicular to a chord bisects the chord (and the converse)
4.10 3D shapes and volume	**C** find the surface area of simple shapes using the area formulae for triangles and rectangles	
	D find the surface area of a cylinder	
	E find the volume of prisms, including cuboids and cylinders, using an appropriate formula	
	F convert between units of volume within the metric system	e.g. cm^3 to m^3 and vice versa and 1 litre = $1000\,cm^3$
4.11 Similarity	**A** understand and use the geometrical properties that similar figures have corresponding lengths in the same ratio but corresponding angles remain unchanged	
	B use and interpret maps and scale drawings	

5 Vectors and transformation geometry

What learners need to study:		Notes
5.2 Transformation geometry	**A** understand that rotations are specified by a centre and an angle	
	B rotate a shape about a point through a given angle	
	C recognise that an anti-clockwise rotation is a *positive* angle of rotation and a clockwise rotation is a *negative* angle of rotation	
	D understand that reflections are specified by a mirror line	Such as $x = 1, y = 2,$ $y = x, y - x = 0$
	E construct a mirror line given an object and reflect a shape given a mirror line	e.g. reflect a triangle in the line $y = x$
	F understand that translations are specified by a distance and direction	
	G translate a shape	
	H understand and use column vectors in translations	
	I understand that rotations, reflections and translations preserve length and angle so that a transformed shape under any of these transformations remains congruent to the original shape	
	J understand that enlargements are specified by a centre and a scale factor	Positive scale factor only (including fractions)
	K understand that enlargements preserve angles and not lengths	
	L enlarge a shape given the scale factor	With or without a centre given
	M identify and give complete descriptions of transformations	

N.B. *5.1 Vectors* are assessed in Higher Tier only.

AO3 Handling data

6 Statistics and probability

What learners need to study:		Notes
6.1 Graphical representation of data	**A(ii)** use different methods of presenting data	Pictograms, bar charts and pie charts
	B use appropriate methods of tabulation to enable the construction of statistical diagrams	
	C interpret statistical diagrams	Does not include tables
6.2 Statistical measures	**A** understand the concept of average	Data could be in a list or tabulated form
	B calculate the mean, median, mode and range for a discrete data set	Includes simple problems using these measures
	C calculate an estimate for the mean for grouped data	
	D identify the modal class for grouped data	

Unit 2: Higher Tier

Questions will assume knowledge from Unit 1 and Unit 2 Foundation Tier and Unit 1 Higher Tier subject content.

Specification points have been selected for Unit 2 Higher Tier from the overall body of subject content from the International GCSE in Mathematics (Specification A) (4MA1) linear qualification. At unit level, the specification points will not necessarily be presented sequentially.

International GCSE in Mathematics A (Modular) specification content mapping document details the breakdown of the subject content for each unit at each tier, in relation to the International GCSE in Mathematics (Specification A) (4MA1) linear qualification. It can be accessed from the Pearson Qualifications webpage from *Course materials: Specification and sample assessments*.

AO1 Numbers and algebra

1 Numbers and the number system

What learners need to study:		Notes
1.6 Percentages	**A** use repeated percentage change	Calculate the total percentage increase when an increase of 30% is followed by a decrease of 20%
	B solve compound interest problems	
1.9 Standard form	**A** solve problems involving standard form	

2 Equations, formulae and identities

What learners need to study:			Notes
2.2 Algebraic manipulation	**E**	use algebra to support and construct proofs	
2.3 Expressions and formulae	**A**	understand the process of manipulating formulae or equations to change the subject, to include cases where the subject may appear twice or a power of the subject occurs	Make r the subject of $V = \frac{4}{3}\pi r^3$ Make a the subject of $3a + 5 = \frac{4 - a}{r}$ Make l the subject of $T = 2\pi\sqrt{\frac{l}{g}}$
2.5 Proportion	**A**	set up problems involving direct or inverse proportion and relate algebraic solutions to graphical representation of the equations	To include only the following: $y \propto x,\ y \propto \frac{1}{x}$ $y \propto x^2,\ y \propto \frac{1}{x^2}$ $y \propto x^3,\ y \propto \frac{1}{x^3}$ $y \propto \sqrt{x},\ y \propto \frac{1}{\sqrt{x}}$
2.6 Simultaneous linear equations	**A**	calculate the exact solution of two simultaneous equations in two unknowns	$2x + 3y = 17$ $3x - 5y = 35$
	B	interpret the equations as lines and the common solution as the point of intersection	
2.7 Quadratic equations	**D**	solve simultaneous equations in two unknowns, one equation being linear and the other being quadratic	$y = 2x - 11$ and $x^2 + y^2 = 25$ $y = 11x - 2$ and $y = 5x^2$

What learners need to study:		Notes
2.8 Inequalities	**A** solve quadratic inequalities in one unknown and represent the solution set on a number line	$x^2 \leqslant 25$, $4x^2 > 25$ $x^2 + 3x + 2 > 0$
	B identify harder examples of regions defined by linear inequalities	Shade the region defined by the inequalities $x \leqslant 4$, $y \leqslant 2x + 1$, $5x + 2y \leqslant 20$

3 Sequences, functions and graphs

What learners need to study:			Notes
3.1 Sequences	**A**	understand and use common difference (d) and first term (a) in an arithmetic sequence	e.g. given 2nd term is 7 and 5th term is 19, find a and d
	B	know and use nth term $= a + (n-1)d$	
	C	find the sum of the first n terms of an arithmetic series (Sn)	e.g. given $4 + 7 + 10 + 13 + \ldots$ find sum of first 50 terms
3.2 Function notation	**A**	understand the concept that a function is a mapping between elements of two sets	
	B	use function notations of the form $\mathrm{f}(x) = \ldots$ and $\mathrm{f} : x \mapsto \ldots$	
	C	understand the terms 'domain' and 'range' and which values may need to be excluded from a domain	$\mathrm{f}(x) = \frac{1}{x-2}$ exclude $x = 2$
	D	understand and find the composite function fg and the inverse function f^{-1}	'fg' will mean 'do g first, then f'
3.3 Graphs	**B**	apply to the graph of $y = \mathrm{f}(x)$ the transformations $y = \mathrm{f}(x) + a$, $y = \mathrm{f}(ax)$, $y = \mathrm{f}(x + a)$, $y = a\mathrm{f}(x)$ for linear, quadratic, sine and cosine functions	
	C	interpret and analyse transformations of functions and write the functions algebraically	
	D	find the gradients of non-linear graphs	By drawing a tangent
	E	find the intersection points of two graphs, one linear (y_1) and one non-linear (y_2) and recognise that the solutions correspond to the solutions of $(y_2 - y_1) = 0$	The x values of the intersection of the two graphs: $y = 2x + 1$ $y = x^2 + 3x - 2$ are the solutions of: $x^2 + x - 3 = 0$ Similarly, the x values of the intersection of the two graphs: $y = 5$ $y = x^3 - 3x^2 + 7$ are the solutions of: $x^3 - 3x^2 + 2 = 0$

What learners need to study:		Notes
3.4 Calculus	**A** understand the concept of a variable rate of change	
	B differentiate integer powers of x	
	C determine gradients, rates of change, stationary points, turning points (maxima and minima) by differentiation and relate these to graphs	Find the coordinates of the maximum and minimum points
	D distinguish between maxima and minima by considering the general shape of the graph only	
	E apply calculus to linear kinematics and to other simple practical problems	The displacement, s metres, of a particle from a fixed point O after t seconds is given by: $s = 24t^2 - t^3,$ $0 \leqslant t \leqslant 20$ Find expressions for the velocity and the acceleration

AO2 Shape, space and measure

4 Geometry

What learners need to study:		Notes
4.6 Circle properties	**A** understand and use the internal and external intersecting chord properties	
	B recognise the term 'cyclic quadrilateral'	
	C understand and use angle properties of the circle including: (i) angle subtended by an arc at the centre of a circle is twice the angle subtended at any point on the remaining part of the circumference (ii) angle subtended at the circumference by a diameter is a right angle (iii) angles in the same segment are equal (iv) the sum of the opposite angles of a cyclic quadrilateral is $180°$ (v) the alternate segment theorem	Formal proof of these theorems is not required
4.10 3D shapes and volume	**A** find the surface area and volume of a sphere and a right circular cone using relevant formulae	
4.11 Similarity	**A** understand that areas of similar figures are in the ratio of the square of corresponding sides	
	B understand that volumes of similar figures are in the ratio of the cube of corresponding sides	
	C use areas and volumes of similar figures in solving problems	

5 Vectors and transformation geometry

What learners need to study:		Notes
5.1 Vectors	**A** understand that a vector has both magnitude and direction	
	B understand and use vector notation including column vectors	The notations $\overrightarrow{OA}$ and $\mathbf{a}$ will be used
	C multiply vectors by scalar quantities	
	D add and subtract vectors	
	E calculate the modulus (magnitude) of a vector	Find the magnitude of: $\begin{pmatrix} 5 \\ -3 \end{pmatrix}$
	F find the resultant of two or more vectors	$\overrightarrow{OA} = 3\mathbf{a}$, $\overrightarrow{AB} = 2\mathbf{b}$, $\overrightarrow{BC} = \mathbf{c}$ so: $\overrightarrow{OC} = 3\mathbf{a} + 2\mathbf{b} + \mathbf{c}$ $\overrightarrow{CA} = -\mathbf{c} - 2\mathbf{b}$
	G apply vector methods for simple geometrical proofs	

AO3 Handling data

6 Statistics and probability

What learners need to study:		Notes
6.1 Graphical representation of data	**B** construct cumulative frequency diagrams from tabulated data	
	C use cumulative frequency diagrams	
6.2 Statistical measures	**A** estimate the median from a cumulative frequency diagram	
	B understand the concept of a measure of spread	
	C find the interquartile range from a discrete data set	The terms 'upper quartile' and 'lower quartile' may be used
	D estimate the interquartile range from a cumulative frequency diagram	

4 Assessment information

Assessment requirements

Unit number	Level	Assessment information	Number of marks allocated in the unit
Unit 1	Foundation	Two-hour written examination, set and marked by Pearson. The unit is weighted at 50% of the qualification, targeted at grades 5–1. A Foundation Tier formulae sheet (*Appendix 3*) will be included in the written examinations.	100
Unit 2	Foundation	Two-hour written examination, set and marked by Pearson. The unit is weighted at 50% of the qualification, targeted at grades 5–1. Knowledge of the Foundation Tier Unit 1 content is assumed for learners being prepared for Foundation Unit 2. A Foundation Tier formulae sheet (*Appendix 3*) will be included in the written examinations.	100
Unit 1	Higher	Two-hour written examination, set and marked by Pearson. The unit is weighted at 50% of the qualification, targeted at grades 9–4, with an allowable grade 3. A Higher Tier formulae sheet (*Appendix 4*) will be included in the written examinations.	100

Unit number	Level	Assessment information	Number of marks allocated in the unit
Unit 2	Higher	Two-hour written examination, set and marked by Pearson. The unit is weighted at 50% of the qualification, targeted at grades 9–4, with an allowable grade 3. Knowledge of the Foundation Tier Unit 1 content is assumed for learners being prepared for Higher Tier Unit 2. Knowledge of the Higher Tier Unit 1 content is assumed for learners being prepared for Higher Tier Unit 2. A Higher Tier formulae sheet (*Appendix 4*) will be included in the written examinations.	100

Each unit has approximately equal marks available for each of the targeted grades.

Approximately 40% of common questions targeted at grades 5 and 4 appear across Unit 1 assessment at Foundation Tier and Unit 1 assessment at Higher Tier, as well as across Unit 2 assessment at Foundation Tier and Unit 2 assessment at Higher Tier to aid standardisation and comparability of award between tiers.

Diagrams will not necessarily be drawn to scale and measurements should not be taken from diagrams unless instructions to this effect are given.

Each learner may be required to use mathematical instruments, e.g. pair of compasses, ruler, protractor.

Tracing paper may be used in the examinations.

Calculators may be used in the examinations (please see *Section 4: Assessment information, Calculators* for further information).

Questions will be set in SI units (international system of units).

Calculators

Learners will be expected to have access to a suitable electronic calculator for all examination papers.

Foundation Tier

The electronic calculator to be used by learners attempting Foundation Tier examination papers (1F and 2F) should have these functions as a minimum:

- $+, -, \times, \div, x^2, \sqrt{x}$, memory, brackets, $x^y, x^{\frac{1}{y}}, \overline{x}, \sum x, \sum fx$, sine, cosine, tangent and their inverses

Higher Tier

The electronic calculator to be used by learners attempting Higher Tier examination papers (1H and 2H) should have these functions as a minimum:

- $+, -, \times, \div, x^2, \sqrt{x}$, memory, brackets, $x^y, x^{\frac{1}{y}}, \overline{x}, \sum x, \sum fx$, standard form, sine, cosine, tangent and their inverses

Prohibitions

Calculators with any of the following facilities are prohibited in all examinations:

- databanks
- retrieval of text or formulae
- QWERTY keyboards
- built-in symbolic algebra manipulations
- symbolic differentiation or integration.

Assessment objectives and weightings

		% in International GCSE (Modular)
AO1	Demonstrate knowledge, understanding and skills in number and algebra: • numbers and the numbering system • calculations • solving numerical problems • equations, formulae and identities • sequences, functions and graphs.	57–63
AO2	Demonstrate knowledge, understanding and skills in shape, space and measures: • geometry and trigonometry • vectors and transformation geometry.	22–28
AO3	Demonstrate knowledge, understanding and skills in handling data: • statistics • probability.	12–18
	TOTAL	**100**

Relationship of assessment objectives to units

Unit	**Assessment objective**		
	AO1	**AO2**	**AO3**
Unit 1 and Unit 2 Foundation Tier	28.5–31.5%	11–14%	6–9%
Unit 1 and Unit 2 Higher Tier	28.5–31.5%	11–14%	6–9%
Total for International GCSE (Modular)	57–63%	22–28%	12–18%

All units will be available for assessment from June 2025.

Relationship of problem-solving and mathematical reasoning skills to tier

Unit	**Standard mathematical techniques**	**Problem solving**	**Mathematical reasoning**
Unit 1 and Unit 2 Foundation Tier	60%	25%	15%
Unit 1 and Unit 2 Higher Tier	50%	30%	20%

5 Administration and general information

Entries

Entering for different tiers across both units is not permitted in this qualification. Details of how to enter learners for the examinations for this qualification can be found in our *International Information Manual*. A copy is made available to all examinations officers and is also available on our website.

Learners should be advised that, if they take two qualifications in the same subject, colleges, universities and employers are very likely to take the view that they have achieved only one of the two GCSEs/International GCSEs (Modular). Learners or their advisers who have any doubts about subject combinations should check with the institution to which they wish to progress before embarking on their programmes.

This International GCSE in Mathematics (Specification A) (Modular) is only available to centres outside of the UK.

Access arrangements, reasonable adjustments, special consideration and malpractice

Equality and fairness are central to our work. Our equality policy requires all learners to have equal opportunity to access our qualifications and assessments, and our qualifications to be awarded in a way that is fair to every learner.

We are committed to making sure that:

- learners with a protected characteristic (as defined by the UK Equality Act 2010) are not, when they are undertaking one of our qualifications, disadvantaged in comparison to learners who do not share that characteristic
- all learners achieve the recognition they deserve for undertaking a qualification and that this achievement can be compared fairly to the achievement of their peers.

Language of assessment

Assessment of this qualification will be available in English only. All learner work must be in English.

We recommend that learners have the ability to read and write in English at Level B2 of the Common European Framework of Reference for Languages.

Access arrangements

Access arrangements are agreed before an assessment. They allow learners with special educational needs, disabilities or temporary injuries to:

- access the assessment
- show what they know and can do without changing the demands of the assessment.

The intention behind an access arrangement is to meet the particular needs of an individual learner with a disability without affecting the integrity of the assessment. Access arrangements are the principal way in which awarding organisations comply with the duty under the UK Equality Act 2010 to make 'reasonable adjustments'.

Access arrangements should always be processed at the start of the course. Learners will then know what is available and have the access arrangement(s) in place for assessment.

Reasonable adjustments

The UK Equality Act 2010 requires an awarding organisation to make reasonable adjustments where a learner with a disability would be at a substantial disadvantage in undertaking an assessment. The awarding organisation is required to take reasonable steps to overcome that disadvantage.

A reasonable adjustment for a particular learner may be unique to that individual and therefore might not be in the list of available access arrangements.

Whether an adjustment will be considered reasonable will depend on a number of factors, including:

- the needs of the learner with the disability
- the effectiveness of the adjustment
- the cost of the adjustment
- the likely impact of the adjustment on the learner with the disability and other learners.

An adjustment will not be approved if it involves unreasonable costs to the awarding organisation, timeframes or affects the security or integrity of the assessment. This is because the adjustment is not 'reasonable'.

Special consideration

Special consideration is a post-examination adjustment to a learner's mark or grade to reflect temporary injury, illness or other indisposition at the time of the examination/assessment, which has had, or is reasonably likely to have had, a material effect on a learner's ability to take an assessment or demonstrate their level of attainment in an assessment.

Further information

Please see our website for further information about how to apply for access arrangements and special consideration.

For further information about access arrangements, reasonable adjustments and special consideration please refer to the JCQ website: https://www.jcq.org.uk/.

Candidate malpractice

Candidate malpractice refers to any act by a candidate that compromises or seeks to compromise the process of assessment or which undermines the integrity of the qualifications or the validity of results/certificates.

Candidate malpractice in controlled assessments discovered before the learner has signed the declaration of authentication form does not need to be reported to Pearson.

Candidate malpractice found in controlled assessments after the declaration of authenticity has been signed, and in examinations **must** be reported to Pearson using a *JCQ Form M1* (available at www.jcq.org.uk/exams-office/malpractice). The form should be emailed to candidatemalpractice@pearson.com.

Please provide as much information and supporting documentation as possible. Note that the final decision regarding appropriate sanctions lies with Pearson.

Failure to report malpractice constitutes staff or centre malpractice.

Staff/centre malpractice

Staff and centre malpractice includes both deliberate malpractice and maladministration of our qualifications. As with candidate malpractice, staff and centre malpractice is any act that compromises or seeks to compromise the process of assessment or that undermines the integrity of the qualifications or the validity of results/certificates.

All cases of suspected staff malpractice and maladministration **must** be reported immediately, before any investigation is undertaken by the centre, to Pearson on a *JCQ Form M2(a)* (available at www.jcq.org.uk/exams-office/malpractice).

The form, supporting documentation and as much information as possible should be emailed to pqsmalpractice@pearson.com. Note that the final decision regarding appropriate sanctions lies with Pearson.

Failure to report malpractice itself constitutes malpractice.

More detailed guidance on malpractice can be found in the latest version of the document *JCQ Suspected Malpractice: Policies and Procedures*, available at www.jcq.org.uk/exams-office/malpractice.

Awarding and reporting

The Pearson Edexcel International GCSE in Mathematics (Specification A) (Modular) qualification will be graded and certificated on a nine-grade scale from 9 to 1, using the total UMS, where 9 is the highest grade. For Foundation Tier grades 5–1 are available, and for Higher Tier grades 9–4 are available (grade 3 allowed). Individual unit results will be reported. The first certification opportunity for the Pearson Edexcel International GCSE in Mathematics (Specification A) (Modular) will be in August 2025. Learners whose level of achievement is below the minimum judged by Pearson to be of sufficient standard to be recorded on a certificate will receive an unclassified U result.

For modular qualifications, the 'final mark' or the Uniform Mark Scale (UMS) mark is different from the score on the exam paper – the so-called 'raw mark'.

The purpose of UMS is to ensure that where learners complete a unit in different series, the value of their score is maintained when certificating.

Learners will receive a uniform mark between 0 and the maximum uniform mark for each unit.

Unit results

This shows the total UMS for each unit and the associated grade boundaries. Learners will receive a uniform mark between 0 and the maximum uniform mark for each unit.

Unit grade	Maximum uniform mark	9	8	7	6	5	4	3	2	1	U
Unit 1F or 2F	120					60	48	36	24	12	0
Unit 1H or 2H	120	108	96	84	72	60	48	42			

Qualification results

This shows the total UMS for the qualification as a whole and the associated grade boundaries. The minimum uniform marks required for each grade:

International GCSE Mathematics (Specification A) (Modular)

Qualification grade	Maximum uniform mark	9	8	7	6	5	4	3	2	1	U
Foundation Tier (cash-in code: 4XMAF)	240					120	96	72	48	24	0
Higher Tier (cash-in code: 4XMAH)	240	216	192	168	144	120	96	84			

Learners with a uniform mark in the range 0-23 will be Unclassified.

Resitting of units

Learners can resit any unit irrespective of whether the qualification is to be cashed in. If a learner resits a unit more than once, only the better of the two most recent attempts of that unit will be available for aggregation to a qualification grade.

Results of units will be held in Pearson Edexcel's unit bank for as many years as this specification remains available. Once the International GCSE in Mathematics (Specification A) (Modular) has been certificated, all unit results are deemed to be used up at that level. These results cannot be used again towards a further award of the same qualification at the same level.

Learner recruitment and progression

Pearson's policy concerning recruitment to our qualifications is that:

- they must be available to anyone who is capable of reaching the required standard
- they must be free from barriers that restrict access and progression
- equal opportunities exist for all learners.

Prior learning and other requirements

There are no prior learning or other requirements for this qualification.

Progression

Learners can progress from this qualification to:

- the Pearson Edexcel International GCSE in Further Pure Mathematics
- the GCE Advanced Subsidiary (AS) and Advanced Level in Mathematics, Further Mathematics and Pure Mathematics
- the International Advanced Subsidiary (AS) and Advanced Level in Mathematics, Further Mathematics and Pure Mathematics
- other equivalent, Level 3 Mathematics qualifications
- further study in other areas where mathematics is required
- other further training or employment where numerate skills and knowledge are required.

Appendices

Appendix 1: Codes

Type of code	Use of code	Code
Cash-in codes	Cash-in codes are used in combination with entry codes to aggregate the learner's unit scores to obtain the overall grade for the qualification. There is a separate cash-in code for Foundation Tier and Higher Tier.	Foundation Tier: 4XMAF Higher Tier: 4XMAH
Entry codes	To enter the learner for their examination, unit codes are used as entry codes. To obtain the overall grade for the qualification, entry codes are used in combination with cash-in codes. There is a separate cash-in code for Foundation Tier and Higher Tier.	Please refer to the Pearson Edexcel *Information Manual*, available on the Pearson qualifications website.
Unit codes	Each unit is assigned a unit code. This unit code is used as an entry code to indicate that a learner wishes to take the assessment for a particular unit.	Unit 1 Foundation Tier: 4WM1F/01 Unit 2 Foundation Tier: 4WM2F/01 Unit 1 Higher Tier: 4WM1H/01 Unit 2 Higher Tier: 4WM2H/01

Appendix 2: Transferable skills

The need for transferable skills

In recent years, higher education institutions and employers have consistently flagged the need for learners to develop a range of transferable skills to enable them to respond with confidence to the demands of undergraduate study and the world of work.

The Organisation for Economic Co-operation and Development (OECD) defines skills, or competencies, as 'the bundle of knowledge, attributes and capacities that can be learned and that enable individuals to successfully and consistently perform an activity or task and can be built upon and extended through learning.'[1]

To support the design of our qualifications, the Pearson Research Team selected and evaluated seven global 21st-century skills frameworks. Following on from this process, we identified the National Research Council's (NRC) framework [2] as the most evidence-based and robust skills framework, and have used this as a basis for our adapted skills framework.

The framework includes cognitive, intrapersonal skills and interpersonal skills.

The skills have been interpreted for this specification to ensure they are appropriate for the subject. All of the skills listed are evident or accessible in the teaching, learning and/or assessment of the qualification. Some skills are directly assessed. Pearson materials will support you in identifying these skills and developing these skills in learners.

The table overleaf sets out the framework and gives an indication of the skills that can be found in the Pearson Edexcel International GCSE in Mathematics (Specification A) (Modular) and indicates the interpretation of the skill in this area. A full subject interpretation of each skill, with mapping to show opportunities for learners' development is provided on the subject pages of our website: qualifications.pearson.com.

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[1] OECD – *Better Skills, Better Jobs, Better Lives* (OECD Publishing, 2012)

[2] Koenig, J A, National Research Council – *Assessing 21st Century Skills: Summary of a Workshop* (National Academies Press, 2011)

Cognitive skills	Cognitive processes and strategies	• Critical thinking • Problem solving • Analysis • Reasoning/argumentation • Interpretation • Decision making • Adaptive learning • Executive function
	Creativity	• Creativity • Innovation
Intrapersonal skills	Intellectual openness	• Adaptability • Personal and social responsibility • Continuous learning • Intellectual interest and curiosity
	Work ethic/ conscientiousness	• Initiative • Self-direction • Responsibility • Perseverance • Productivity • Self-regulation (metacognition, forethought, reflection) • Ethics • Integrity
	Positive core self-evaluation	• Self-monitoring/self-evaluation/self-reinforcement
Interpersonal skills	Teamwork and collaboration	• Communication • Collaboration • Teamwork • Co-operation • Interpersonal skills
	Leadership	• Leadership • Responsibility • Assertive communication • Self-presentation

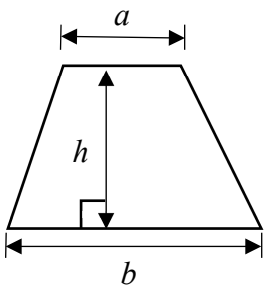
Problem solving for translating problems in mathematical or non-mathematical contexts into a process or a series of mathematical processes and solving them.

Initiative for using mathematical knowledge, independently (without guided learning), to further own understanding.

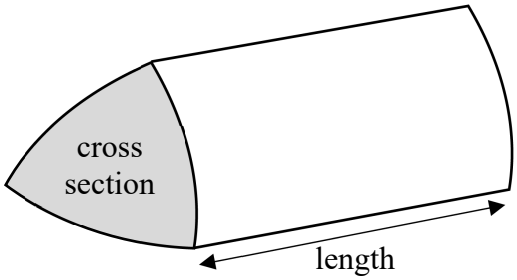
Communication to communicate a mathematical process or technique (verbally or written) to peers and teachers and answer questions from others.

Appendix 3: Foundation Tier formulae sheet

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

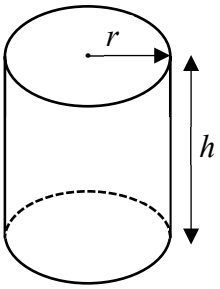


Volume of prism = area of cross section × length



Volume of cylinder = $\pi r^2 h$

Curved surface area of cylinder = $2\pi rh$



Appendix 4: Higher Tier formulae sheet

Arithmetic series

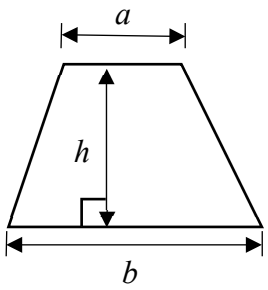
Sum to n terms, $S_n = \frac{n}{2}\left[2a + (n-1)d\right]$

The quadratic equation

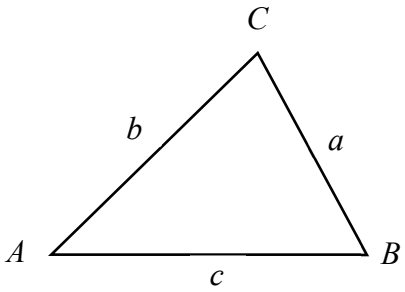
The solutions of $ax^2 + bx + c = 0$ where $a \neq 0$ are given by:

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

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



Trigonometry



In any triangle ABC

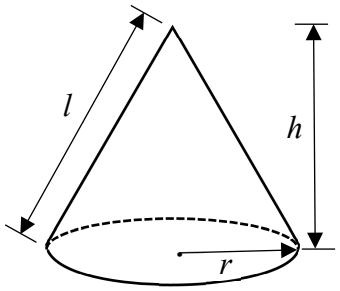
Sine Rule $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

Cosine Rule $a^2 = b^2 + c^2 - 2bc\cos A$

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

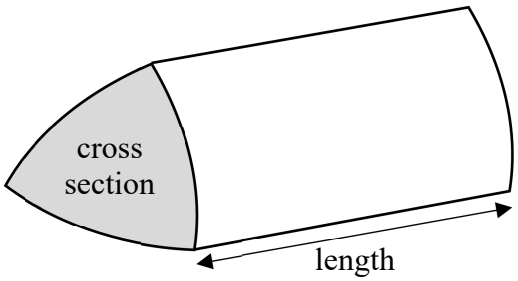
Volume of cone $= \frac{1}{3}\pi r^2 h$

Curved surface area of cone $= \pi rl$



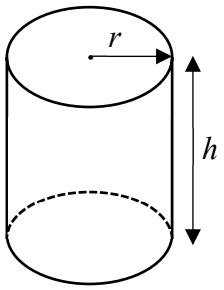
Volume of prism

= area of cross section × length



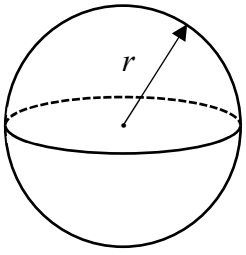
Volume of cylinder $= \pi r^2 h$

Curved surface area of cylinder $= 2\pi rh$



Volume of sphere $= \frac{4}{3}\pi r^3$

Surface area of sphere $= 4\pi r^2$



Appendix 5: Notation

Notation used in the examination include the following:

$\{ \quad \}$	the set of
$\mathrm{n}(A)$	the number of elements in the set A
$\{ x : \quad \}$	the set of all x such that
$\in$	is an element of
$\notin$	is not an element of
$\varnothing$	the empty (null) set
$\mathscr{E}$	the universal set
$\cup$	union
$\cap$	intersection
$\subset$	is a subset of
A'	the complement of the set A
PQ	operation Q followed by P
$\mathrm{f}: A \to B$	is a function under which each element of set A has an image in set B
$\mathrm{f}: x \mapsto y$	f is a function under which x is mapped to y
$\mathrm{f}(x)$	the image of x under the function f
f^{-1}	the inverse relation of the function f
fg	the function g followed by function f, i.e. $\mathrm{f}(\mathrm{g}(x))$
—○—○—	open interval on the number line
—●—●—	closed interval on the number line
$\mathbf{a}$	the vector $\mathbf{a}$
$\overrightarrow{AB}$	the vector represented in magnitude and direction by $\overrightarrow{AB}$ the vector from point A to point B
$\lvert\mathbf{a}\rvert$	the magnitude of vector $\mathbf{a}$

Appendix 6: Glossary

Term	Definition
Assessment objectives	The requirements that learners need to meet to succeed in the qualification. Each assessment objective has a unique focus, which is then targeted in examinations or non-examined assessment (NEA). Assessment objectives may be assessed individually or in combination.
Cash-in codes	Cash-in codes are used in combination with entry codes to aggregate the learner's unit scores to obtain the overall grade for the qualification. There is a separate cash-in code for Foundation Tier and Higher Tier.
Entry codes	To enter the learner for their examination, unit codes are used as entry codes. To obtain the overall grade for the qualification, entry codes are used in combination with cash-in codes. There is a separate cash-in code for Foundation Tier and Higher Tier.
External assessment	Assessment set and marked by an awarding organisation, taken by centres at the same time in the global region.
JCQ	Joint Council for Qualifications. This is a group of UK exam boards which develops policy related to the administration of examinations.
Modular	Modular qualifications contain units of assessment. These units can be taken during the course of study. The final qualification grade is worked out from the combined unit results.
Uniform mark scale (UMS)	A learner's actual marks (or raw marks) will be converted into a UMS mark so that it is possible to see the proportionate result of a learner. The raw marks for each unit may differ, but the uniform mark will be the same.
Unit	A modular qualification will be divided into a number of units. Each unit will have its own assessment.
Unit codes	Each unit is assigned a unit code. This unit code is used as an entry code to indicate that a learner wishes to take the assessment for a particular unit.

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