



Pearson  
Edexcel

New  
innovations  
and support

See inside!

# Pearson Edexcel International GCSE

## Mathematics



SCAN ME

First teaching September 2016

# Choosing Pearson Edexcel as your school's International GCSE partner

Helping your students select their International GCSE options is a key moment in their schooling; it's an important time in learners' lives and we want to reassure you that with Pearson as your qualifications partner, you can be sure both you and your students are setting yourselves up for future success.

In this guide, you'll learn more about who we are, the recognition and progression that our Pearson Edexcel international qualifications enjoy, and we'll take a closer look at International GCSE Mathematics, including a choice of assessment approaches for Mathematics A (linear or modular routes) for first teaching from September 2024.

We wish you the best of success for your International GCSE journey!



## Inside this guide

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## International GCSE Mathematics highlights



New

### A choice of modular or linear assessment

A modular approach is where a qualification's assessments are split into units and taken over several exam series. We are the only awarding body to offer a modular route for International GCSEs as an alternative to the linear assessment route.

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New

### Teaching Hub

A digital solution for all International GCSE Maths teachers: spend less time planning and more teaching with our Teaching Hub, providing educators with everything they need to deliver successful lessons.

See page 20



# Welcome to Pearson

## We're pleased to meet you!

Pearson is the world's leading learning company. We provide world class qualifications, assessments, digital content and learning experiences to international schools all over the world to enable more effective teaching and learning and to help learners increase their skills and global employability prospects.

We partner with more than 6,500 schools, universities, and employers worldwide:

- **at school level**, to offer Pearson Edexcel International and UK qualifications to over 3.5 million students annually;
- **at university level**, to ensure Pearson Edexcel qualifications are recognised and accepted by universities all over the world;
- **and with employers**, by building 21st century skills into our qualifications at the outset, to ensure learners have transferable skills alongside the knowledge they need to progress into the careers of their choice.

## Our qualifications heritage stretches back over 150 years

Pearson's qualifications heritage stretches back over 150 years, our qualifications are offered in 100 countries worldwide and we mark over 10 million exam scripts per year on behalf of the UK Department for Education.

Pearson Edexcel is regulated by Ofqual, ensuring our curricula meet the highest standards and our exams follow carefully controlled procedures at every stage of their development, delivery, marking and reporting.

As the largest awarding organisation in the UK, Pearson Edexcel regularly achieves the highest marking accuracy of all UK boards.

## What this means for you

You can trust Pearson Edexcel International GCSE qualifications; thousands of students around the world take these same qualifications every year, progressing onto our popular modular International A Levels (IAL<sup>®</sup>), International BTECs or the IB Diploma, and to the world's most respected universities.

®IAL is a registered trademark of Pearson Education Ltd in the UK and other countries.



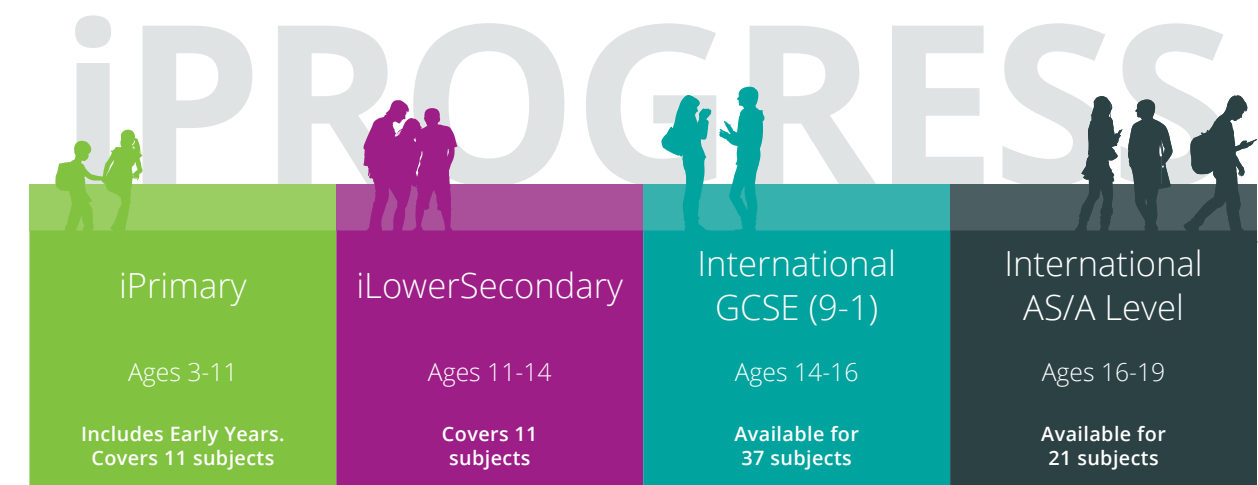
## Modern, progressive International GCSE qualifications

## For globally minded learners aged 14-16

Renowned across the world for academic excellence, Pearson Edexcel International GCSEs provide learners with the skills and knowledge they need to progress to International A Levels (IAL<sup>®</sup>) and onto the most prestigious universities across the world.

Pearson Edexcel International GCSEs are part of iProgress, our complete series of academic qualifications for 3 to 19 year-olds at international schools following a UK curriculum.

At every stage, our iProgress continuum delivers a consistent learning journey with world class support, assessments, and teaching and learning resources for students and teachers, everywhere in the world.





## About the 9–1 grading scale

In 2014, the UK Government introduced a nine-point grading scale (9–1) to raise standards and recognise top-performing students. This replaced the traditional A\*–G grading. After consultation with international schools, Pearson Edexcel chose to follow the 9–1 grading scale to ensure comparability for our international students.

Since then millions of GCSEs and International GCSEs are awarded each year using the 9–1 grading scale, making it the most used and recognised grading scale for this qualification worldwide.

## What this means for you

Because our Pearson Edexcel International GCSE qualifications are equivalent to and benchmarked, grade for grade, against UK GCSEs, you can be confident that they are recognised and respected across the world. They offer increased differentiation for your top learners (a grade 9 represents a higher level of attainment than A\*) and will deliver the progression for your learners that you want to see.

**“I not only recommend the International GCSE system because of their 9-1 grading scale due to having an extra grade to differentiate the top tier students, but also because this system is recognized globally therefore it opens up more opportunities for students to study at university abroad.”**

John Andrew Tampubolon, International GCSE (9-1) student at Al Yasmina School, Abu Dhabi.

GCSE (9-1) grading structure	Old GCSE grading structure
9	A*
8	A
7	B
6	C
5	D
4	E
3	F
2	G
1	U
U	U

## Recognised worldwide for academic excellence

### Designed for global learners

Pearson Edexcel International GCSEs are globally recognised qualifications for learners aged 14 to 16 with academic content and assessment designed specifically for international learners. We continually review the content of our specifications – adding international topics and examples using local contexts where possible – to ensure the content of our qualifications is ever more relevant and engaging for students around the world and to enable learning in a local context to a global standard.

### Equipping learners with transferable skills and knowledge

Opportunities to develop transferable skills such as problem solving, critical thinking, leadership and collaboration, are integrated throughout each of our Pearson Edexcel International GCSE qualifications to ensure learners have the skills and knowledge they need to progress onto International A Level, the next level of study.

### Suitable and accessible for ESL learners

Our International GCSE qualifications have been designed in collaboration with subject experts, teachers and university professors, to ensure that the content and assessment methods are appropriate and will enable successful progression for learners, including those for whom English is not their first language.



### From International GCSE to flexible, modular A Levels, BTECs or the IB Diploma

Pearson Edexcel International GCSE qualifications are excellent preparation for Pearson Edexcel International A Levels (IAL®), International BTECs, our popular, career-focused qualifications developed in partnership with employers, or the IB Diploma.

As the next step up from International GCSEs, International A Levels are designed for students aged 16–18 who want to progress to the best universities around the world. They use the popular and flexible modular approach, which means exams are taken at the end of each unit of study or throughout the programme of study when students feel prepared and ready.

We work closely with higher education institutions around the world to secure recognition for our qualifications and are proud to confirm that International A Levels are recognised and accepted for entry to more than 650 leading universities worldwide.

## What this means for you

Pearson Edexcel International GCSEs are excellent preparation for Pearson Edexcel International A Levels, International BTECs or the IB Diploma, and progression onto the world’s top universities. Over 650 higher education institutions worldwide recognise and accept Pearson Edexcel International A Level qualifications for entry onto undergraduate degree courses and with the twenty first century skills your learners will develop as part of their International GCSE curriculum, you can be confident they will have qualifications, skills and knowledge that admissions teams and employers are looking for.



# Pearson Edexcel International GCSE Mathematics qualifications

## Thoroughly researched and designed specifically for the modern world

### Excellent grade outcomes

Pearson Edexcel International GCSE Mathematics qualifications provide an accessible, positive and motivating exam experience that allows all learners to feel they have been able to demonstrate their knowledge, resulting in excellent grade outcomes.

### Entirely calculator-based assessment

Assessments are entirely calculator-based, reflecting the skills needed in the modern world, and allowing students to focus on problem-solving rather than crunching the numbers. Students can also use advanced graphical calculators in the exam.

Entirely calculator-based assessment

### No updates needed

Our International GCSE Mathematics qualifications are thoroughly researched from the outset to remove the need to update the content and assessment model during the life of the specification.

### Progression to A Level

Pearson Edexcel International GCSE Mathematics qualifications are designed to meet the needs of Key Stage 4 learners (ages 14-16) and to provide a smooth transition to International A Level (IAL<sup>®</sup>) or UK A Level Mathematics. Through our world-class qualification development process, we have consulted with International Advanced Level and A Level teachers, as well as university professors, to validate the appropriateness of this qualification including the content, skills and assessment structure.

**“Students passing this qualification could easily progress to Level 3 academic study.”**

Professor Alison Halstead, Pro Vice Chancellor for Strategic Academic Developments, Aston University, UK



### Extensive resources

A wealth of resources and past papers with grade boundaries are available to support you and your learners during in-school assessments and mocks.

### Problem-solving skills

These qualifications deliver an excellent, accessible assessment of problem-solving to support students in their future and aid the transition to further mathematical studies. Students develop their problem-solving skills by translating problems in mathematical or non-mathematical contexts. They also develop reasoning skills through exercises such as presenting arguments and proofs, and making deductions and drawing conclusions from mathematical information.

### Clear and straightforward question papers

Question papers are clear and provide sufficient challenge and support for students of all ability ranges. Mark schemes are straightforward so that the assessment requirements are clear.

### Comparable to UK GCSEs

Pearson Edexcel International GCSE (9-1) Mathematics A, B and Further Pure Mathematics qualifications are designed to be of a broad equivalent standard to Pearson's regulated Pearson Edexcel GCSE qualifications. This ensures that Pearson Edexcel International GCSEs (9-1) are recognised globally and provide learners with the same progression routes.

**“I decided to take Edexcel International GCSEs as they are accepted by institutions around the world for higher studies. The course is modern, well structured & examinations based.**

**Thanks to my ever supporting parents, school, teachers and Edexcel for helping me to gain a world-class qualification.”**

Ashfaq Faiz, Riyadh, Saudi Arabia



### Choose a linear or modular assessment approach

Pearson Edexcel is the only awarding body to offer a modular approach for International GCSEs as an alternative to the linear assessment approach, with parity between the two.

A modular approach is where a qualification's assessments are split into units and taken over several exam series.

**The modular assessment route is only available to schools outside of the UK.**

#### Modular International GCSE (9-1) Mathematics A.

1. First teaching: September 2024
2. First assessment: May/June 2025



### How modular International GCSEs work

#### Units can be assessed in any exam series

With a modular route, there are no restrictions on students taking units together; all units can be treated separately, and they can be taken in any International GCSE exam series. All exam papers for modular International GCSEs are at the same standard as the exam papers on the linear route.

#### No time limits to the qualification

Students can take and re-sit individual unit assessments in any series. This means students have more opportunities to get feedback to improve their performance and get the grades they need to progress.

#### Students 'cash in' unit results when ready

Once a student has all their unit results for the qualification they are taking, they exchange those for a grade – this is called 'cashing in'. To cash in, all units must have been entered.

### The benefits of a modular route for learners

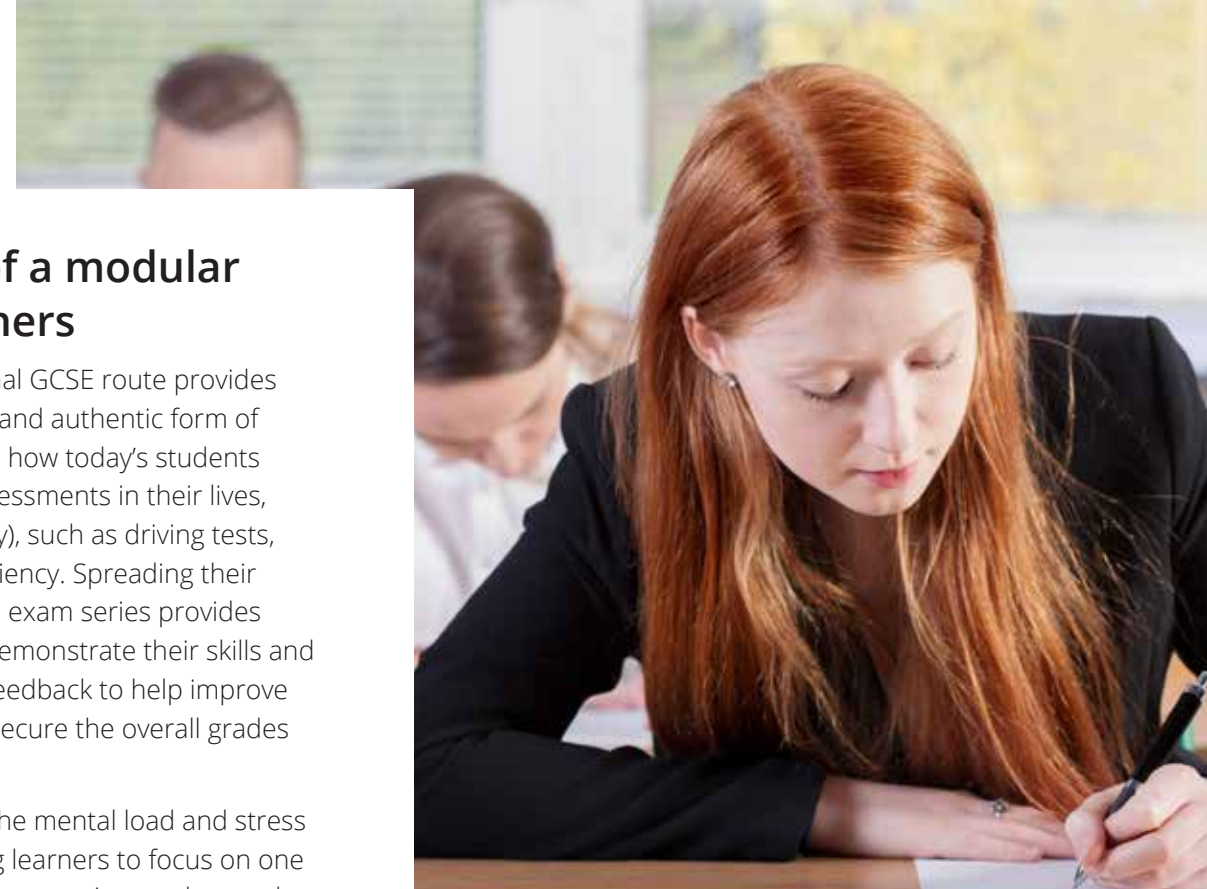
The modular International GCSE route provides learners with a sensible and authentic form of assessment that reflects how today's students sit other high stakes assessments in their lives, (i.e., when they are ready), such as driving tests, or tests of English proficiency. Spreading their examination load across exam series provides more opportunities to demonstrate their skills and abilities and to receive feedback to help improve their performance and secure the overall grades they need to progress.

It can also help reduce the mental load and stress at exam time by allowing learners to focus on one year of curriculum content at a time and spread out their high stakes exams over two years and multiple exam series. It also allows learners to take advantage of multiple re-sit opportunities if needed.

### The benefits of a modular route for educators and parents

Choosing a modular route can also support your teachers, exam officers and parents.

It provides teachers with rich mid-cycle data on learner performance via post-exam analysis support tools such as Results Plus. It eases the pressures faced by exam officers as it allows international schools to spread the exam admin burden for a single cohort over two years. And where parents pay exam fees, it helps with budgeting by enabling families to spread their child's exam fees over two years.



### What this means for you

We are the only awarding organisation to offer a linear and modular route for International GCSEs and parity between the two. You can choose the right assessment approach to benefit your students and to help create a compelling competitive advantage for your school. If you choose a modular route, we will support you in moving to this approach.

The choice is yours though! If you are happy with the linear approach, there is no need to move to a modular route; our linear International GCSEs will continue to be offered and taken widely by students around the world.

# Mathematics specifications: Linear Approach

Now with  
November  
exam series  
(replaces January)

## Unique features across all Pearson Edexcel International GCSE (9 –1) Mathematics specifications

Mathematics A (4MA1)	Mathematics B (4MB1)	Further Pure Mathematics (4PM1)
Closest to the UK GCSE Mathematics course (1MA1), adapted to include topics key to the transition to further studies.	Designed to be closer to a more traditionally structured Mathematics curriculum.	Provides an opportunity to stretch strong students, by giving them experience of key elements of the Pure GCE A Level and IAL syllabuses.
<b>Two tier of entry papers:</b> Foundation and Higher, to allow students to be entered for a level appropriate to them.	<b>Higher tier only.</b>	<b>Higher tier only.</b>
<b>2 x 2 hour equally weighted papers:</b> Feedback from teachers indicates that this is a popular assessment model.	<b>Alternative assessment model:</b> Paper 1 is 1.5 hours in length with shorter questions. Paper 2 is 2.5 hours in length with more in-depth questions.	<b>2 x 2 hour equally weighted papers.</b>

The use of a calculator is permitted in all exams.



# The differences between Pearson Edexcel International GCSE (9–1) Mathematics A and B: Linear Approach

Mathematics A (4MA1)	Mathematics B (4MB1)
Foundation tier (grades 5-1) and Higher tier (grades 9-4) with an allowable grade 3.	Higher tier only (grades 9-4) with an allowable grade 3.
2 x 2 hour papers.	1 x 1 hour 30 mins paper (Paper 1). 1 x 2 hour 30 mins paper (Paper 2).
Each paper contributes 50% of the qualification.	Paper 1 contributes 33.3% of the qualification. Paper 2 contributes 66.6% of the qualification.
Slightly higher emphasis towards AO3, Handling Data, than the 4MB1 specification.	Slightly higher emphasis towards AO2, Shape, Space and Measure, than the 4MA1 specification.
Content unique to the 4MA1 specification: <ul style="list-style-type: none"> <li>• Summation of linear sequences</li> <li>• Transformation of graphs using function notation</li> <li>• Cumulative frequency graphs</li> </ul>	Content unique to the 4MA1 specification: <ul style="list-style-type: none"> <li>• Matrices</li> <li>• The factor theorem</li> <li>• Algebraic division of a cubic by a linear factor</li> </ul>



Find out more about our qualifications at  
[pearsoninternational-schools.com/internationalgcse](https://www.pearsoninternational-schools.com/internationalgcse)



## An alternative assessment route for Pearson Edexcel International GCSE (9-1) Mathematics A

The modular approach retains the same content as the existing linear specification, but breaks the journey into two units with an exam at the end of each unit. The current linear route will continue to be offered and remain exactly as it is, in addition to the new modular route. The expected standard of performance in exams in both linear and modular is Year 11 standard.

Our linear specification is structured in a way where all topics can be assessed in both exam papers. This means all content needs to be taught before a student is ready to sit either paper.

In the modular form, the overall content of the specification remains the same, but is split across the two units and tiers. Each unit assesses 50% of the overall content. The below table breaks down the overall modular assessment structure, which is the same structure as the linear approach. To achieve an International GCSE (9-1) Mathematics A modular qualification, students can sit either Unit 1 and Unit 2 (higher) or Unit 1 and Unit 2 (foundation).

### Modular exam structure

Unit 1	Unit 2
<b>Foundation Tier</b> <ul style="list-style-type: none"> <li>Duration: 2 hours</li> <li>Total number of marks: 100</li> <li>Weighting: 50%</li> <li>Grade range: 5-1</li> </ul>	<b>Foundation Tier</b> <ul style="list-style-type: none"> <li>Duration: 2 hours</li> <li>Total number of marks: 100</li> <li>Weighting: 50%</li> <li>Grade range: 5-1</li> </ul>
<b>Higher Tier</b> <ul style="list-style-type: none"> <li>Duration: 2 hours</li> <li>Total number of marks: 100</li> <li>Weighting: 50%</li> <li>Grade range: 9-4 with an allowable grade 3</li> </ul>	<b>Higher Tier</b> <ul style="list-style-type: none"> <li>Duration: 2 hours</li> <li>Total number of marks: 100</li> <li>Weighting: 50%</li> <li>Grade range: 9-4 with an allowable grade 3</li> </ul>

For each unit exam, a formulae sheet will be included, and the use of a calculator is permitted.

Approximately 40% of questions are the same across Foundation and Higher Tier papers.

### Modular content summary

Our modular qualification splits the content in Mathematics into two even units. The table below shows the topic areas that are covered in each unit across Number, Algebra, Shape Space & Measure and Handling Data.

Topics in black are studied by both Foundation and Higher Tier students. Some of these topics are extended when studied by Higher Tier students. For example, Foundation Tier students study changing the subject of a formulae where the subject appears only once. Higher Tier students extend this to include the case where the subject appears more than once or as an index.

Unit 1	Unit 2
<b>Number (AO1)</b> <ul style="list-style-type: none"> <li>Basic number skills</li> <li>Standard form</li> <li>Limits of accuracy</li> <li>Surds and indices</li> </ul>	<b>Number (AO1)</b> <ul style="list-style-type: none"> <li>Ratio and proportion</li> <li>Percentage skills</li> <li>Standard form</li> <li>Repeated percentage change</li> </ul>
<b>Algebra (AO1)</b> <ul style="list-style-type: none"> <li>Basic algebra skills</li> <li>Set notation</li> <li>Plotting graphs</li> <li>Solving basic quadratics <math>x^2 + bx + c = 0</math></li> <li>Solving quadratics <math>ax^2 + bx + c = 0</math></li> <li>Completing the square</li> <li>The quadratic formula</li> </ul>	<b>Algebra (AO1)</b> <ul style="list-style-type: none"> <li>Inequalities</li> <li>Simultaneous equations</li> <li>Sequences</li> <li>Change of subject</li> <li>Algebraic proof</li> <li>Direct and inverse proportion</li> <li>Summation of arithmetic series</li> <li>Function notation and transformations</li> <li>Differentiation</li> </ul>
<b>Shape, Space and Measure (AO2)</b> <ul style="list-style-type: none"> <li>Properties and areas of shapes</li> <li>Trigonometry</li> <li>Pythagoras' theorem</li> <li>Compound measures (speed, density)</li> <li>Sine and Cosine rule</li> <li>Sine area of a triangle</li> <li>3D Pythagoras' theorem</li> </ul>	<b>Shape, Space and Measure (AO2)</b> <ul style="list-style-type: none"> <li>Angles in polygons and circles</li> <li>Symmetry</li> <li>Constructions</li> <li>Volume</li> <li>Similarity</li> <li>Transformations</li> <li>Circle theorems</li> <li>Similar area and volume</li> <li>Vectors</li> </ul>
<b>Handling Data (AO3)</b> <ul style="list-style-type: none"> <li>Basic probability</li> <li>Tree diagrams</li> <li>Conditional probability</li> <li>Histograms</li> </ul>	<b>Handling Data (AO3)</b> <ul style="list-style-type: none"> <li>Statistical measures</li> <li>Cumulative frequency diagrams</li> </ul>

Please note this is a proposed model and could be subject to change.

- Topics in black: studied by both Foundation and Higher Tier students.
- Topics in red: studied by Higher Tier students only.



# Supporting you at every stage

We provide an unparalleled level of support services, tools, resources and training alongside our qualifications, making teachers and students lives easier at every stage.

## At a glance: support for you at every stage

FREE resources and support	Planning, teaching & learning	Exam preparation and assessment	Results support
Getting started guide	✓		
Training events (face-to-face and online)	✓		
Subject advisor support	✓	✓	✓
Free access to <b>Maths Emporium</b> website	✓	✓	
Schemes of work	✓		
Lesson Plans*	✓		
Skills mapping	✓		
Sample assessment materials	✓	✓	
Examiner reports	✓	✓	✓
Exemplar marked responses	✓	✓	
Past papers		✓	
Onscreen Mocks Service*		✓	
examWizard		✓	
Mark schemes		✓	
ResultsPlus mock exam analysis		✓	
ResultsPlus		✓	✓
Access to Scripts service (ATS)			✓

### Additional paid for resources

Curriculum-matched Student Books with ActiveBooks	✓	✓	
Teaching Hub*	✓	✓	
Exam Practice Book*		✓	
Revision Guide*		✓	

\*Available for Pearson Edexcel International GCSE (9-1) Mathematics A. The modular specification and Sample Assessment Materials (SAMs) will be published in February 2024. Accompanying support material will follow.



## Pre and post exam support for your educators

### Supporting you every step of the way

As a Pearson Edexcel centre, you will have access to a full range of integrated support services, tools and resources to support the delivery of your International Mathematics GCSEs, including:

- **Maths Emporium website:** Easy access to a variety of resources all in one place, including past papers, mark schemes, examiner reports and grade boundaries.
- **Teacher training** in-person and online including free 'getting ready to teach' sessions to help your educators make the most of our qualifications. Available for Mathematics A & B.
- **Expert subject advisors** on hand to help with any subject-specific queries you may have and available to support your educators throughout the year.
- **examWizard:** a huge bank of past papers and mark schemes to create topic tests and revision activities in minutes.
- **ResultsPlus:** our popular online results analysis tool, which also includes an insightful group analysis service.
- **Access to Scripts:** our service allows you to view your candidates' marked exam papers for free online or as downloaded PDFs, providing a rich source of information to inform future teaching plans and approaches.
- **Mocks Service:** we provide Mathematics A exam papers for your students to sit in mock examinations. Marked by Pearson examiners, results are uploaded to ResultsPlus for item level analysis. To support flexibility and accessibility, onscreen mocks are now also available.
- Plus, local, experienced Pearson **Consultants** who are there to support you every step of the way.

### Your free subject support

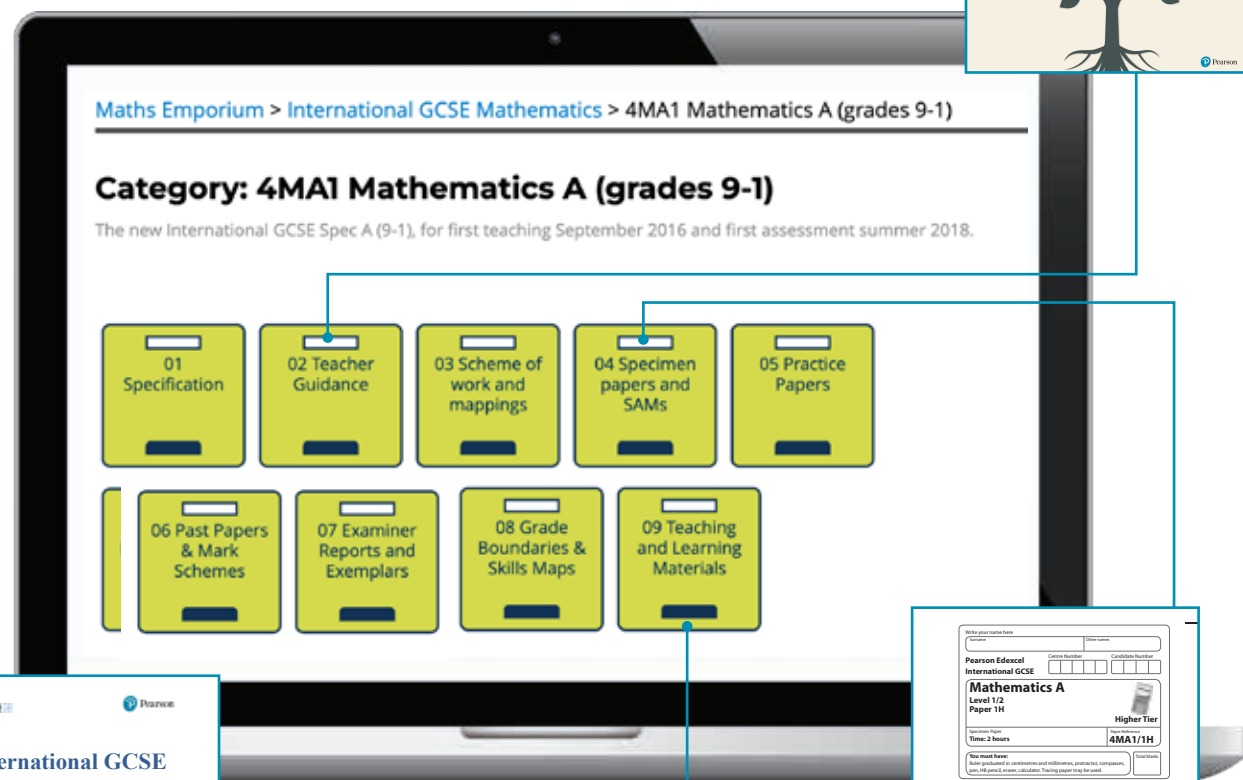
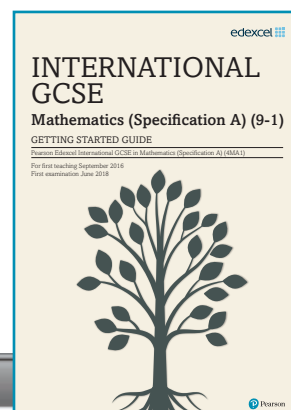
**Our subject advisors** provide fast, reliable, expert help and aim to answer all emailed questions within 48 hours and resolve 90% of issues phoned in on the first call.

Email  
**TeachingMaths@pearson.com**  
or call **+44 (0) 344 463 2535**

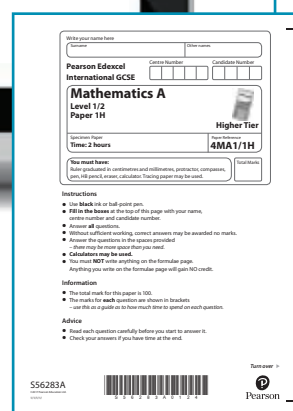
## Maths Emporium

This **free** website for teachers offers access to a wealth of resources, including sample assessment materials, past papers with mark schemes and practice papers.

For Mathematics A, there is a new set of practice papers for Aiming for a grade 4, 5, 7 and 9, where each of the questions selected were indicative of students achieving those grades in the live series. Access these from section 05: Practice Papers.



**International GCSE Mathematics**  
A guide to teaching transferable skills



## A valued support partner

**“One of the good features of ResultsPlus is that it provides the top ten questions that students scored poorly in, so we as the lecturers can actually identify the topics that students found difficult and can incorporate a different approach when teaching our current students.”**

Dr Khong Yoke Kum, A Levels Department, HELP Academy, Malaysia

**I used the website with its course outlines, past papers, summaries of key points, revision notes and mark schemes... they provide great tips about possible exam questions and how you could answer them.**

Alexia Kattavenos, student, The Nicosia Grammar School, Cyprus



**Because of ResultsPlus, students can learn about their mistakes and rectify.**

Kanagambigai, Chief Counsellor, A levels Department, HELP Academy, Malaysia commenting on the ResultsPlus mocks service.

## What this means for you

We will support your educators to deliver an outstanding teaching and learning experience for every student taking Pearson Edexcel International GCSEs.

With examWizard, they will be able to prepare topic tests and revision activities based on past exam questions to help prepare students for their final assessments, and using ResultsPlus, they will

be able to analyse their mock results to pinpoint where they may need further support and can then tailor their teaching to support them.

Post exams, our Access to Scripts service will allow your educators to review students' exam papers for free, providing greater visibility and a deeper understanding of individual students' exam performance and helping them identify skills gaps to tailor teaching plans for future cohorts.

Find out more about our resources at [pearsoninternational-schools.com/internationalgcse](https://pearsoninternational-schools.com/internationalgcse)



# A wide range of teaching and learning resources

## Written specifically to support our qualifications

Developed for Mathematics A, Mathematics B and Further Pure Mathematics, these additional resources have progression, international relevance and support at their core. They provide comprehensive coverage of the specifications and are designed to support students with the best preparation possible for the examination.

## What's available

### For learners

- **Student Book:** Printed Student Book with 3-year digital access to an ActiveBook, a digital version.
- **Exam Practice Book:** Supporting your learners with preparing for the Mathematics A exam. Contains ten units of work in key topic areas and also features basic skills exercises, exam style questions, and a particular focus on higher order problem solving skills.
- **Revision Guide:** Providing students with everything they need for Mathematics A exam preparation with topic summaries, worked examples, exam style practice and hints.

### For educators

- Brand-new **Teaching Hub** platform for Mathematics A, designed to help teachers save planning time and deliver high-quality lessons (see page 20).

Title	ISBN
Mathematics A Student Book 1	978 0 435 18144 4
Mathematics A Student Book 2	978 0 435 18305 9
Mathematics B Student Book	978 0 435 04410 7
Further Pure Mathematics Student Book	978 0 435 18854 2
Mathematics A Exam Practice Book	978 1 292 39496 1
Mathematics A Revision Guide - Higher	978 1 292 28447 7
Mathematics A Teaching Hub	978 1 292 72503 1

## Prepare students to start their International GCSE Maths course with confidence

*Pearson Power Starters* is a fast, focused online programme, specifically written to prepare students to begin their International GCSE Mathematics A & B.

The perfect summer school booster to get all students starting the new academic year on track, the programme enables you to quickly identify gaps in learning and then in just a matter of weeks ensure your students have all the skills and knowledge they need for a smooth transition.

[Learn More](#)

## Curriculum-matched student books

The **embedded transferable skills**, needed for progression to higher education and employment, are signposted so students understand, and can engage with, the skills they're gaining.

Reviewed by a language specialist to ensure the book is written in a **clear and accessible** style, and including glossaries of specialist Maths vocabulary.

106
NUMBER 2
UNIT 2

### PERCENTAGE INCREASE AND DECREASE


To increase a value by  $R\%$  it is necessary to have the original value plus  $R\%$ .

Therefore, we multiply it by a **factor** of  $(1 + \frac{R}{100})$ .

**EXAMPLE 10** SKILL: REASONING

In 2015, the Kingda Ka Roller Coaster at Six Flags (USA) had the largest vertical drop of 139m. If the designers want to increase this height by 12%, what will the new height be?

New height = original height  $\times (1 + \frac{12}{100}) = 139 \times 1.12 = 155.68\text{ m}$



To decrease a value by  $R\%$  it is necessary to have the original value minus  $R\%$ .

Therefore, we multiply it by a factor of  $(1 - \frac{R}{100})$ .

**EXAMPLE 11** SKILL: REASONING

In 2015, the world record for the 100m swimming butterfly in the female Paralympian S12 class was held by Joanna Mendak (Poland) with a time of 65.1 secs.

If this world record is reduced by 5%, what will the new time be?

New time = original time  $\times (1 - \frac{5}{100}) = 65.1 \times 0.95 = 61.845\text{ s} = 61.85\text{ s (2 d.p.)}$

**Note:** this is the same calculation as finding 95% of the original time, so reducing a quantity by 25% is the same as finding 75% of the value and so on.

**KEY POINTS**

- To increase a quantity by  $R\%$ , multiply it by  $1 + \frac{R}{100}$
- To decrease a quantity by  $R\%$ , multiply it by  $1 - \frac{R}{100}$

PERCENTAGE CHANGE	MULTIPLYING FACTOR
+25%	1.25
+75%	1.75
-25%	0.75
-75%	0.25

Specifically developed for international learners, with appropriate **international content**.



### Spend less time planning and more time teaching

Designed to help your teachers spend less time planning and more time teaching, our brand new Teaching Hub for Mathematics A provides everything educators need to deliver lessons to a consistently high standard, with complete coverage of all guided teaching hours, along with exam-preparation resources and CPD support.

Easy to use, and ideal for both specialist and non-specialists, access to this new generation online platform is available as an annual subscription and helps your teachers to:

- **Spend less time planning:** with schemes of work that break the International GCSE Mathematics A specification into hour-long sessions, 180 detailed lesson plans covering all guided teaching hours and time allocations to suit different lesson lengths, as well as in-depth teacher guidance.
- **Deliver great International GCSE lessons:** with thousands of front-of-class resources linked from the lesson plans – including interactive exercises, videos and downloadable worksheets – plus an overview page containing all the top-level information about the lesson as well as links to the textbook.
- **Get every class exam-ready:** with lesson plans giving partially scripted instructions for communicating the new learning points and correcting misconceptions, plus interactive exam-preparation resources ideal to further illustrate complex concepts and consolidate learning.

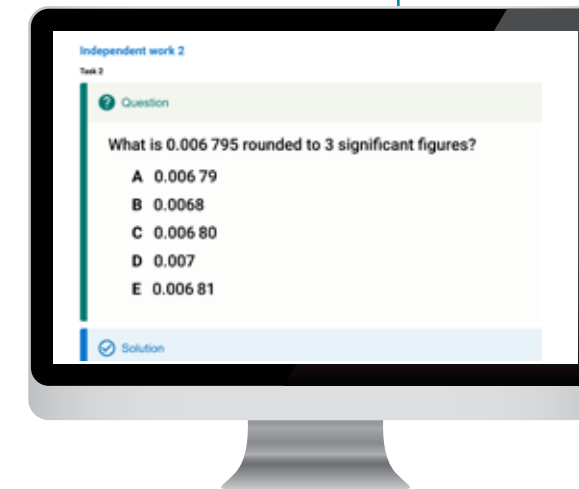
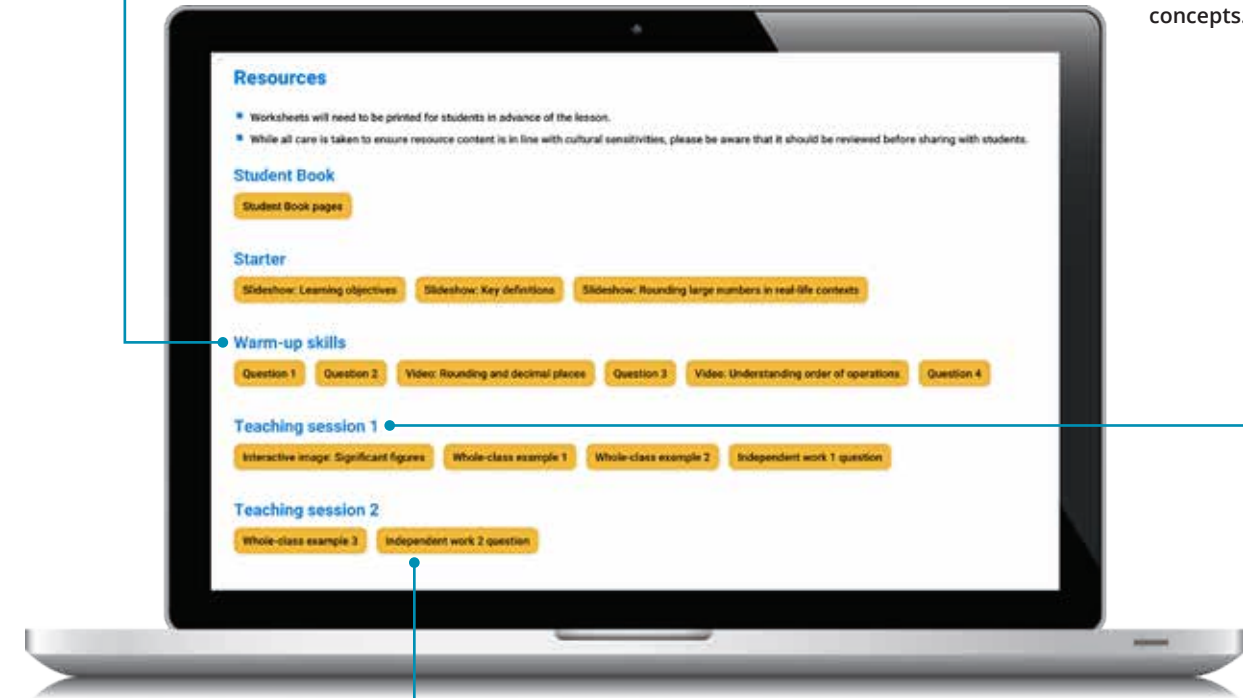


### Thousands of lesson resources at the click-of-a-button

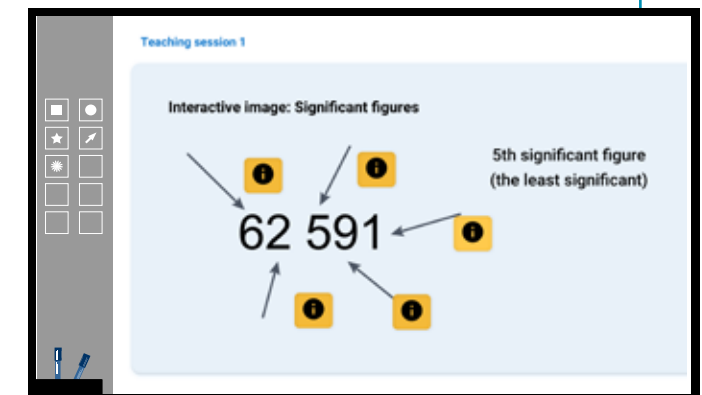
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