



# Enhancing Teaching through Exam Insights, International GCSE Mathematics

Your Trainer is:

# Agenda

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**1** Welcome and Introduction

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**2** Writing assessment materials

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**3** Marking International GCSE papers

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**4** Support from Pearson

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**5** Support from Pearson

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# Aims & Objectives

- be introduced to the process of producing assessment materials
  - be introduced to the process of marking candidates' work
  - Look at examiner recruitment and training
  - be introduced to the codes used in mark schemes
  - look at Examiner Reports to see where centres should concentrate their attention to improve outcomes.
  - look at how a GCSE question is marked in detail.
  - practice marking International GCSE questions [4MA1] – Short response, medium response, extended response, 'show that' questions
  - Network, discuss best practice and share ideas with other teachers.
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# Welcome and Introduction

# Welcome to Pearson Edexcel

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We are the world's leading learning company and as the **UK's largest awarding organisation**, best placed to provide qualifications aligned to the British Educational System.

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Our international **heritage stretches back over 150 years**.

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Today, we partner with schools, universities and employers worldwide, offering world-class, globally-recognized qualifications to over **3.5 million students a year**.

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**6,500**

Trusted and recognized qualifications partner to 6,500 schools, colleges and employers globally.

**10 million**

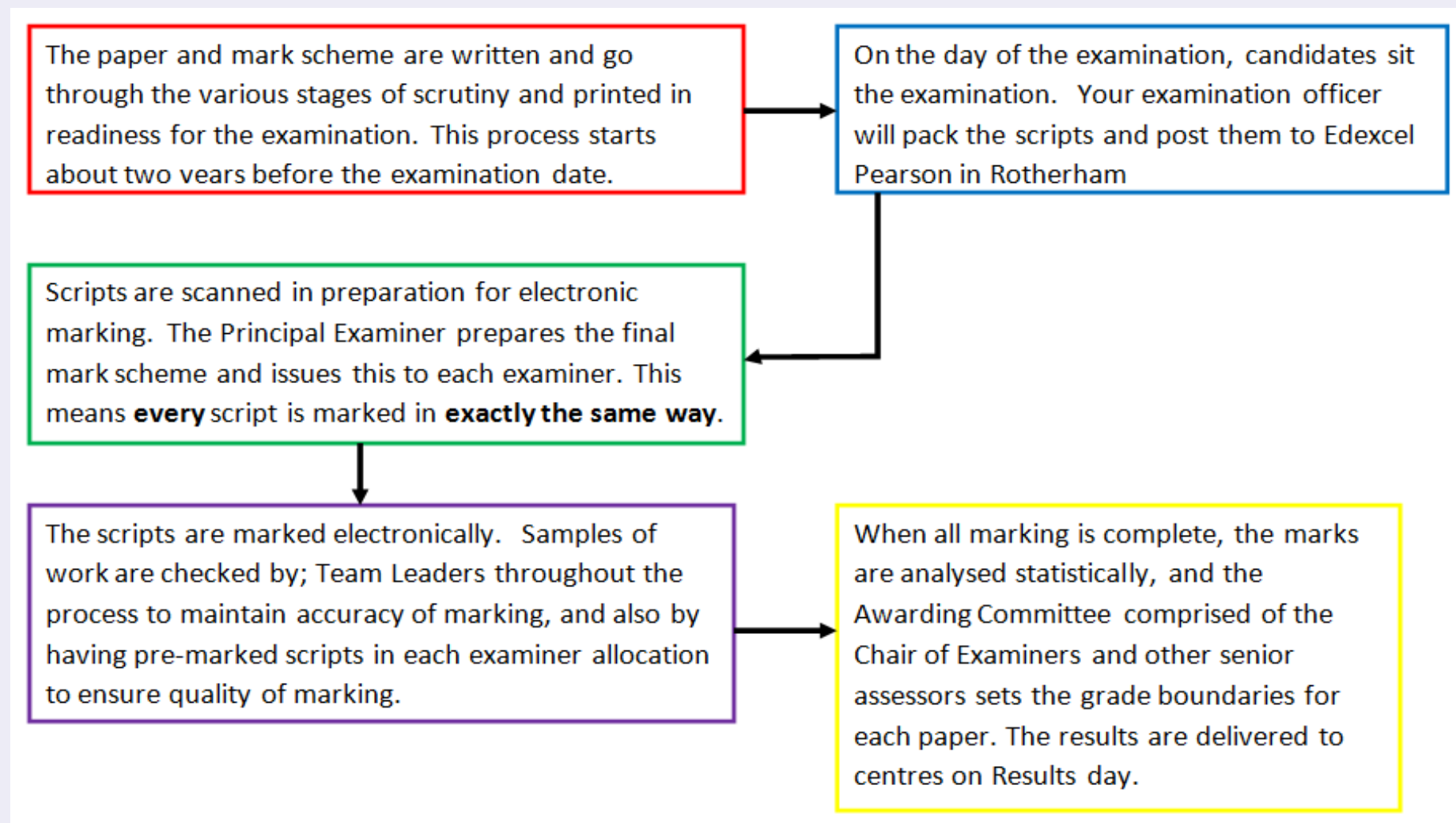
We mark over 10 million exam scripts on behalf of the UK Department for Education each year.

**70**

We operate in 70 countries worldwide.

# Introduction to writing papers

# The flowchart of the assessment process.



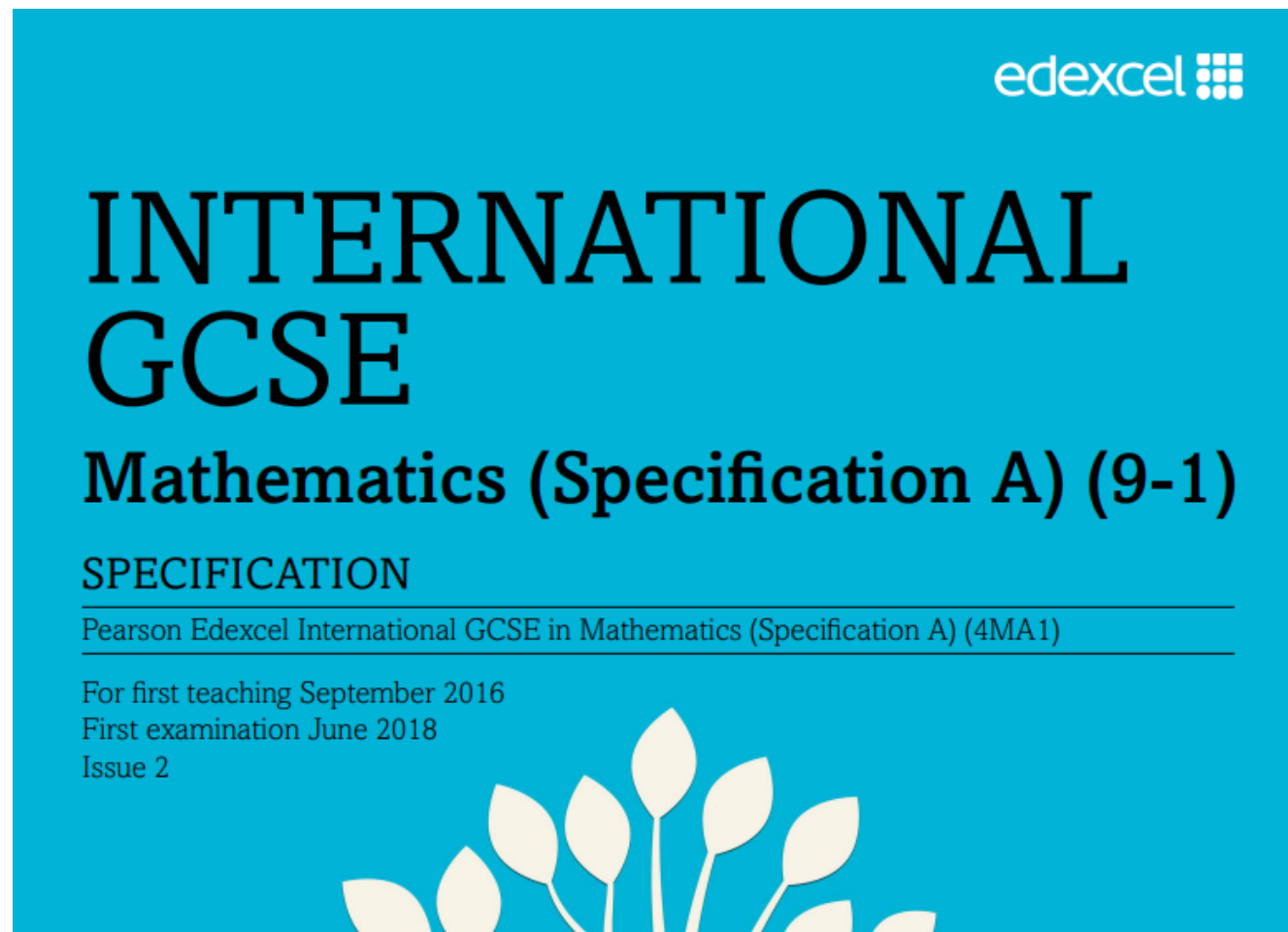
# Writing a paper

## Stage 1

- The Principal Examiner/Writer is issued a contract approximately two years in advance, and it takes about 12 months to complete every stage in the paper writing process from start to the finished paper ready for distribution to centres.
- Key documents the Principal Examiner will use:
  1. The Specification
  2. The Sample Assessment Materials



# The Specification



# The Specification

## Contents

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# Sample of content

## 3 Sequences, functions and graphs

	Students should be taught to:	Notes
<b>3.1 Sequences</b>	<b>A</b> 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>B</b> know and use $n$ th term $= a + (n-1)d$	
	<b>C</b> find the sum of the first $n$ terms of an arithmetic series ( $S_n$ )	e.g. given $4 + 7 + 10 + 13 + \dots$ find sum of first 50 terms
<b>3.2 Function notation</b>	<b>A</b> understand the concept that a function is a mapping between elements of two sets	
	<b>B</b> use function notations of the form $f(x) = \dots$ and $f: x \mapsto \dots$	
	<b>C</b> understand the terms 'domain' and 'range' and which values may need to be excluded from a domain	$f(x) = \frac{1}{x-2}$ exclude $x = 2$
	<b>D</b> understand and find the composite function $fg$ and the inverse function $f^{-1}$	'fg' will mean 'do g first, then f'
<b>3.3 Graphs</b>	<b>A</b> 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 or: $y = \sin x, y = \cos x, y = \tan x$ for angles of any size (in degrees)	$y = x^3$ $y = 3x^3 - 2x^2 + 5x - 4$ $y = 2x^3 - 6x + 2$ $V = 60w(60 - w)$  $y = \frac{1}{x}, x \neq 0,$ $y = 2x^2 + 3x + \frac{1}{x},$ $x \neq 0,$ $y = \frac{1}{x}(3x^2 - 5),$ $x \neq 0,$ $w = \frac{5}{d^2}, d \neq 0$

This is the content that will be tested and that must be taught.

Examples clarifying the content.

# Assessment Objectives

## Assessment objectives and weightings

		% in International GCSE
<b>AO1</b>	Demonstrate knowledge, understanding and skills in number and algebra: <ul style="list-style-type: none"> <li>• numbers and the numbering system</li> <li>• calculations</li> <li>• solving numerical problems</li> <li>• equations, formulae and identities</li> <li>• sequences, functions and graphs.</li> </ul>	57–63%
<b>AO2</b>	Demonstrate knowledge, understanding and skills in shape, space and measures: <ul style="list-style-type: none"> <li>• geometry and trigonometry</li> <li>• vectors and transformation geometry.</li> </ul>	22–28%
<b>AO3</b>	Demonstrate knowledge, understanding and skills in handling data: <ul style="list-style-type: none"> <li>• statistics</li> <li>• probability.</li> </ul>	12–18%
<b>TOTAL</b>		<b>100%</b>

## Relationship of assessment objectives to units

Unit number	Assessment objective		
	AO1	AO2	AO3
Papers 1F and 2F	28.5–31.5%	11–14%	6–9%
Papers 1H and 2H	28.5–31.5%	11–14%	6–9%
<b>Total for International GCSE</b>	57–63%	22–28%	12–18%

All components will be available for assessment from June 2018.

## Relationship of problem-solving and mathematical reasoning skills to tier.

	Problem solving	Mathematical reasoning
Foundation (1F and 2F)	25%	15%
Higher (1H and 2H)	30%	20%

# Calculators

## Calculators

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

### Foundation Tier

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

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

### Higher Tier

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

- $+, -, \times, \div, x^2, \sqrt{x}$ , memory, brackets,  $x^y, x^{\frac{1}{y}}, \bar{x}, \sum x, \sum fx$ , 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 information

## Assessment requirements

Paper number	Level	Assessment information	Number of marks allocated in the paper
Paper 1F	Foundation	Assessed through a 2-hour examination set and marked by Pearson.  The paper is weighted at 50% of the qualification, targeted at grades 5–1.	100
Paper 2F	Foundation	Assessed through a 2-hour examination set and marked by Pearson.  The paper is weighted at 50% of the qualification, targeted at grades 5–1.	100
Paper 1H	Higher	Assessed through a 2-hour examination set and marked by Pearson.  The paper is weighted at 50% of the qualification, targeted at grades 9–4 with 3 allowed.	100
Paper 2H	Higher	Assessed through a 2-hour examination set and marked by Pearson.  The paper is weighted at 50% of the qualification, targeted at grades 9–4 with 3 allowed.	100



## Sample assessment materials

Sample papers and mark schemes can be found in the *Pearson Edexcel International GCSE in Mathematics Sample Assessment Materials (SAMs)* document.

# Notation we use in the examination

## Appendix 6: Notation

Notation used in the examination include the following:

$\{ \quad \}$	the set of
$n(A)$	the number of elements in the set $A$
$\{ x : \}$	the set of all $x$ such that
$\in$	is an element of
$\notin$	is not an element of
$\emptyset$	the empty (null) set
$\mathcal{U}$	the universal set
$\cup$	union
$\cap$	intersection
$\subset$	is a subset of
$A'$	the complement of the set $A$
$PQ$	operation $Q$ followed by $P$
$f: A \rightarrow B$	is a function under which each element of set $A$ has an image in set $B$
$f: x \mapsto y$	$f$ is a function under which $x$ is mapped to $y$
$f(x)$	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. $f(g(x))$
	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 $B$
$ \mathbf{a} $	the magnitude of vector $\mathbf{a}$

# Sample Assessment Materials

# INTERNATIONAL GCSE

## Mathematics (Specification A) (9-1)

### SAMPLE ASSESSMENT MATERIALS

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Pearson Edexcel International GCSE in Mathematics (Specification A) (4MA1)

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For first teaching September 2016


First examination June 2018

Issue 2





# The frontispiece of the paper

Write your name here	
Surname	Other names
<b>Pearson Edexcel</b>	
<b>International GCSE</b>	Centre Number [ ][ ][ ][ ][ ]
	Candidate Number [ ][ ][ ][ ][ ]
<b>Mathematics A</b>	
<b>Level 1/2</b>	
<b>Paper 1F</b>	<b>Foundation Tier</b>
Sample assessment material for first teaching September 2016	
<b>Time: 2 hours</b>	Paper Reference <b>4MA1/1F</b>
<b>You must have:</b> Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.	
	Total Marks [ ]

## Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Without sufficient working, correct answers may be awarded no marks.
- Answer the questions in the spaces provided  
– *there may be more space than you need.*
- **Calculators may be used.**
- You must **NOT** write anything on the formulae page.  
Anything you write on the formulae page will gain NO credit.

## Information

- The total mark for this paper is 100.
- The marks for **each** question are shown in brackets  
– *use this as a guide as to how much time to spend on each question.*

## Advice

- Read each question carefully before you start to answer it.
- Check your answers if you have time at the end.

S51830A

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1/1/



Turn over ►

PEARSON

# The exam paper

**You must have:** Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

Total Marks

## Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Without sufficient working, correct answers may be awarded no marks.
- Answer the questions in the spaces provided – *there may be more space than you need.*
- **Calculators may be used.**
- You must **NOT** write anything on the formulae page.
- Anything you write on the formulae page will gain NO credit.

## Information

- The total mark for this paper is 100.
- The marks for **each** question are shown in brackets – *use this as a guide as to how much time to spend on each question.*

## Advice

- Read each question carefully before you start to answer it.
- Check your answers if you have time at the end.

Note this carefully –  
**SHOW ALL WORKING**

Students should try to answer every question. Often some marks can be picked up by weaker students on questions at the end of the paper.

However, if a student needs more space, they can ask for A4 size paper and hand it in with their completed question paper.

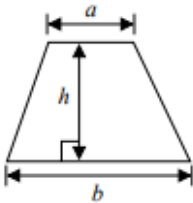
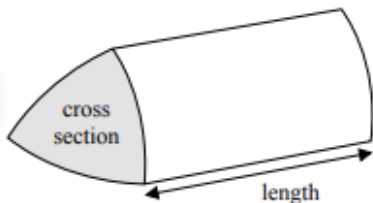
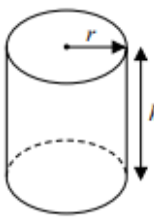
Good students check their answers:

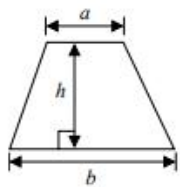
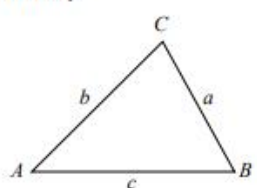
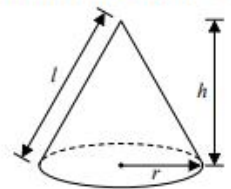
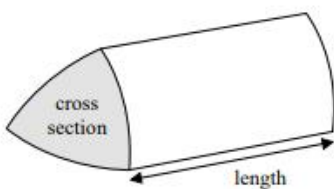
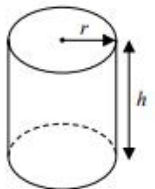
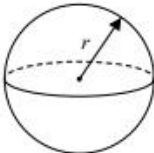
- Is my answer reasonable?
- Can I check using substitution?
- Can I use approximations?

There are 100 marks to be answered in 120 minutes. Some questions will be answered faster than others. Encourage students to **THINK** about questions which may be puzzling at first sight. There is time!

Turn over

The formulae given to candidates in examinations

International GCSE Mathematics Formulae sheet – Foundation Tier	
<b>Area of trapezium</b> $= \frac{1}{2}(a + b)h$	
<b>Volume of prism</b> = area of cross section $\times$ length	
<b>Volume of cylinder</b> $= \pi r^2 h$ <b>Curved surface area of cylinder</b> $= 2\pi r h$	

International GCSE Mathematics Formulae sheet – Higher Tier	
<b>Arithmetic series</b> Sum to $n$ terms, $S_n = \frac{n}{2} [2a + (n - 1)d]$	<b>Area of trapezium</b> $= \frac{1}{2}(a + b)h$ 
<b>The quadratic equation</b> The solutions of $ax^2 + bx + c = 0$ where $a \neq 0$ are given by: $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$	
<b>Trigonometry</b> 	<b>In any triangle ABC</b> <b>Sine Rule</b> $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$ <b>Cosine Rule</b> $a^2 = b^2 + c^2 - 2bc \cos A$ <b>Area of triangle</b> $= \frac{1}{2} ab \sin C$
<b>Volume of cone</b> $= \frac{1}{3} \pi r^2 h$ <b>Curved surface area of cone</b> $= \pi r l$ 	<b>Volume of prism</b> = area of cross section $\times$ length 
<b>Volume of cylinder</b> $= \pi r^2 h$ <b>Curved surface area of cylinder</b> $= 2\pi r h$ 	<b>Volume of sphere</b> $= \frac{4}{3} \pi r^3$ <b>Surface area of sphere</b> $= 4\pi r^2$ 

Sample pages

Answer ALL TWENTY THREE questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

- 1 Yoko flew on a plane from Tokyo to Sydney.  
The plane flew a distance of 7800 km.  
The flight time was 9 hours 45 minutes.  
Work out the average speed of the plane in kilometres per hour.

Total marks

\_\_\_\_\_ km/h

(Total for Question 1 is 3 marks)

- 2 Penny, Amjit and James share some money in the ratios 3 : 6 : 4  
Amjit gets \$28 more than James.  
Work out the amount of money that Penny gets.

\$ \_\_\_\_\_

(Total for Question 2 is 3 marks)

- 3 A factory has 60 workers.

The table shows information about the distances, in km, the workers travel to the factory each day.

Distance ( $d$ km)	Frequency
$0 < d \leq 5$	12
$5 < d \leq 10$	6
$10 < d \leq 15$	4
$15 < d \leq 20$	6
$20 < d \leq 25$	14
$25 < d \leq 30$	18

Part marks

- (a) Write down the modal class.

\_\_\_\_\_ (1)

- (b) Work out an estimate for the mean distance travelled to the factory each day.

\_\_\_\_\_ km (4)

One of these workers is chosen at random.

- (c) Write down the probability that this worker travels more than 20 km to the factory each day.

\_\_\_\_\_ (2)

(Total for Question 3 is 7 marks)

# Mark allocation of grades

## Higher Tier

- 40% marks distributed evenly over grades 4 & 5
- 60% of marks distributed over grades 6, 7, 8 & 9

## Foundation tier

- All marks distributed evenly over grades 1, 2, 3, 4 & 5

## Allocation of marks in a Foundation paper

$$\sum AO1 = 60 \pm 3, \sum AO2 = 25 \pm 3, \sum AO3 = 15 \pm 3, \text{ and} \\ \sum AO1 + \sum AO2 + \sum AO3 = 100$$

And

$$\sum G1 + G2 + G3 + G4 + G5 = 100 \text{ and} \\ G1 = G2 = G3 = G4 = G5 = 20 \pm 1$$

And

$$\sum PS \approx 25, \sum R \approx 15 \text{ with } \sum PS + R = 40$$

This is for the Foundation level, paper F1, say.

The grid for Higher level, H1 will have a similar structure.

One additional constraint is that there have to be a considerable number of questions and hence marks common to F1 and H1, so changing a question on F tier can have a knock-on effect on H tier.

## Writing a paper – Stage 2

When the Principal Examiner completes the first draft of the paper AND mark scheme, it is sent via **secure** email transfer [live papers are **NEVER** just emailed] to the Chair of examiners of the specification for the first scrutiny.

It is checked for adherence to the specification, suitability of content, level of demand etc.

On completion of this scrutiny, the Principal Examiner/Writer completes any corrections/changes recommended by the Chair.

## Writing a paper – stage 3

### Revision

Once the paper is updated it is sent to the revisor(s) who go through the paper in great detail, checking for

- Accuracy
- Adherence to the specification
- Grammar
- Demand
- Correct answers in the mark scheme

The revisor will usually offer some alternative wording for consideration before the next stage. The paper is sent back to the writer for further corrections/modifications – the object being to get the paper as well prepared for the next stage as possible.



## Writing a paper –stage 4

### QPEC

[Question paper evaluation committee]

The committee comprises of:

Chair/Chief/Writer/Edexcel subject officers/[observers]

The paper is gone through in great detail at this stage. We discuss every question/mark scheme to finalise the paper before the first printing [**stage 5**]. The content/demand/layout/grammar is all discussed and dissected to make sure everyone is happy with the final paper.

## Writing a paper -stage 5

The paper is sent for its **first** printing.

## Writing a paper – stages 6 and 7

### Stage 6

The paper is scrutinised by a subject expert. This colleague will complete the paper [firstly without reference to the mark scheme] to check that:

- It can be completed in the allocated time
- It contains no questions that are not in the specification
- Is mathematically sound
- There are no errors in the mark scheme – perhaps there are alternative solutions we should consider

### Stage 7

The paper is checked by a proof reader. It is checked for:

- Correct grammar and spelling
- Suitable contexts – particularly for overseas candidates

If any mathematical/grammatical/printing errors are found, the paper is reprinted. We usually have about 3 or 4 reprints to finalise a paper.

## Writing papers – stage 8

Before the paper is progressed to Stage 8, there is now an Additional Check by another scrutineer and proofreader to apply one final scrutiny.

### **Stage 8**

This last stage is the final check that all corrections have been implemented and the paper and mark scheme are both completely free from errors and can proceed to the final printing stage.

The paper is then signed off by the writer, subject officers at Pearson and the Chair of Examiners.

# Activity 1

## Activity 1

### Grade 4

# Marking some exam questions.

Have a go at marking two questions in any way that you usually work.

Here is the first question with its mark scheme. This is from Q3 Paper 1H June 2025 so is a common question at grade 4 with the Foundation paper.

3

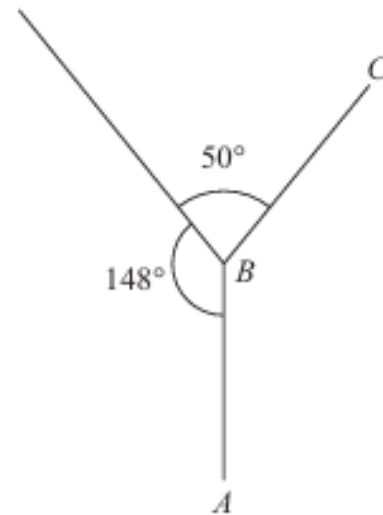


Diagram **NOT**  
accurately drawn

$AB$  and  $BC$  are two sides of a regular polygon with  $n$  sides.

Work out the value of  $n$   
Show your working clearly.

# Activity 1

3	eg $360 - (148 + 50) (= 162)$ <b>or</b> $180 - 50 (= 130)$ <b>or</b> $180 - 148 (= 32)$			4	M1 for method to interior angle of the polygon <b>or</b> start to the method of finding the exterior angle of the polygon
	eg $180 - "162" (= 18)$ <b>or</b> $148 - "130" (= 18)$ <b>or</b> $50 - "32" (= 18)$	eg $180(n - 2) = "162"n$ <b>or</b> $180(n - 2) \div n = "162"$			M1 for method to find the exterior angle <b>or</b> for setting up an equation using sum of interior angles formula
	eg $360 \div "18"$	eg $(n =) 360 \div (180 - "162")$			M1 for a complete method
	<i>Working required</i>		20		A1 dep on M1
					<b>Total 4 marks</b>

## Activity 1

### Response 1

M1 for  $360 - (148 + 50) (= 162)$

M0M0A0 no further progress made - they have attempted a trial and improvement method but the answer is incorrect

NOTE: 20 is seen in the workspace but this is not linked to the answer on the answer line and therefore M1 only for 162

### Response 2

M1 for  $360 - (148 + 50)$  (evaluated incorrectly)

M1 for setting up an equation using the sum of interior angle formula

M1 for complete method - they have rearranged the equation to reach 360 ( $180 - "162"$ ) (they have 15 instead of 18 but comes from a correct method)

A0 incorrect answer



# Activity 1

## Grade 9

Here is the second question; Q24 paper 1H June 2025  
As it is the last but final question in the paper it is a grade 9 question.

**24** An arithmetic series has 30 terms.

The first term is  $a$

The common difference is  $d$

The 20th term is 123

The sum of the 30 terms is 2880

Work out the value of  $a$  and the value of  $d$

Show clear algebraic working.

# Activity 1

## Grade 9

24	$123 = a + (20 - 1)d$ <b>or</b> $123 = a + 19d$			5	M1	for using $U_n = a + (n - 1)d$
	$2880 = \frac{30}{2}(2a + (30 - 1)d)$ <b>or</b> $2880 = \frac{30}{2}(2a + 29d)$ <b>or</b> $192 = 2a + 29d$				M1	for using $S_n = \frac{n}{2}(2a + (n - 1)d)$
	eg $192 = 2a + 29d$ $123 = a + 19d (\times 2)$ $246 = 2a + 38d$ Subtracting $54 = 9d$  <b>or</b>  $192 = 2(123 - 19d) + 29d$ oe  <b>or</b>  $d = 6$	eg $192 = 2a + 29d (\times 19)$ $123 = a + 19d (\times 29)$ $3648 = 38a + 551d$ $3567 = 29a + 551d$ Subtracting $81 = 9a$  <b>or</b>  $192 = 2a + 29\left(\frac{123 - a}{19}\right)$ oe  <b>or</b>  $a = 9$			M1	(dep on M2) for a correct method to find $a$ or $d$ :  coefficients of $a$ or $d$ the same in correct equations <b>and</b> correct operator to eliminate selected variable resulting in an equation in $a$ only or in $d$ only  <b>or</b>  writing $a$ or $d$ in terms of the other variable and correctly substituting (condone missing brackets)
	eg $192 = 2a + 29(\text{“6”})$ oe <b>or</b> $123 = a + 19(\text{“6”})$ oe	eg $192 = 2(\text{“9”}) + 29d$ oe <b>or</b> $123 = \text{“9”} + 19d$ oe			M1	(dep on M3) for substituting their found value of $a$ or $d$ into a correct equation
	<i>Working required</i>		$a = 9$ $d = 6$		A1	dep on M2 $a$ and $d$ must be clearly identified
					<b>Total 5 marks</b>	

# Activity 1

## Grade 9

### Response 1

M1M1 for two correct equations

M1 solving to reach  $d = 6$

M1 found value for  $d$  substituted

into a correct equation (this mark is dep on M3)

A0 incorrect answer

### Response 2

M1 for  $123 = a + 19d$

M1 for  $2880 = 15(2a + 29d)$

M0 method to find  $d$  is incorrect - they must

use the correct equations. Use of incorrect equations will lead to no further marks awarded

M0

this mark is dep on M3 therefore to gain credit for substituting their found value they must have gained the previous 3 marks NOTE: if they have two correct equations, then a correct method to solve

eg substituting one into the other, so gaining the 3rd M, then they make an error in finding variable, they can still gain the 4th M by substituting the found variable into an equation.

A0

incorrect answer

# How papers are marked by Edexcel

# The process on examination day and beyond

- The candidate sits the exam
- The examination officer packs up the scripts and sends them to Edexcel in Rotherham
- The spine is cut off the physical script and it is scanned in machines and stored ready for marking online.

# Type of Examiner

## Type 1

Expert examiner – can mark any question on the paper. Expert items are those which require a judgement of any form.

## Type 2

Graduate Examiner – marks calculation only type questions.

## Type 3

Clerical Examiner – marks those questions that are either correct or incorrect. No calculation or judgement is required.

# For example

7 Harold works in a factory.

His normal hourly rate of pay is £14

His overtime hourly rate of pay is £21

Harold is paid the normal hourly rate of pay for 35 hours in one week.

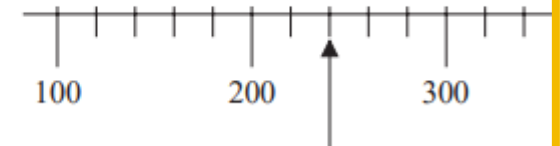
His total pay for this week is £679

Work out the number of hours of overtime he works in this week.

$$T = 4d - 6e$$

(b) Work out the value of  $T$  when  $d = 13$  and  $e = 7$

(b) Write down the number marked with the arrow.



# How your student's papers are marked by Edexcel

Edexcel uses a marking platform called Epen

Epen is set up for each examination series by the Principal Examiner together with the Assistant PEs and Team Leaders on the specification.

This involves:

- Practice scripts – with annotations
- Qualification scripts – examiners must mark 10 Qualification scripts and must score at least 90% accuracy to pass
- Validity scripts which are pre-marked items by the team. Approximately 1 in 25 scripts marked by an examiner will be a Validity script to check accuracy.

Examiners mark responses **ONLY** to the mark scheme. That means that every candidate's work is treated **exactly** the same way, to the manner in which the Principal Examiner and their team have decided.

# Backreading

The senior assessment team back read examiners marking.

We take the following samples:

## **At the start of marking**

CE1 – The first sample of initially 10 items of each question.

## **After 25%– 35% of the allocation**

CE2 – The second sample again with 10 items of each question.

## **After 50% – 60% of the allocation**

CE3 – the last sample is taken of 10 items per question.



# A sample screen shot of what an examiner will see

Candidate response

Marking grid

The screenshot displays an examination interface. On the left, a candidate's handwritten response is shown. The response includes a question about a binomial expansion and a detailed solution. The solution involves equating coefficients to find the values of  $A$  and  $n$ , and then finding the coefficient of  $x^3$ . The final answer for the coefficient of  $x^3$  is  $-\frac{5}{18}$ .

2 Given that

$$1 - \frac{1}{3}x + \frac{5}{36}x^2 + \dots$$

is the binomial expansion, in ascending powers of  $x$ , of  $(1 + Ax)^n$  where  $A$  and  $n$  are rational numbers,

(a) find the value of  $A$  and the value of  $n$  (6)

(b) Hence find the value of the coefficient of  $x^3$  (2)

Give your answer in the form  $-\frac{p}{q}$  where  $p$  is a prime number and  $q$  is an integer.

a.  $(1 + Ax)^n = 1 + n \cdot Ax + \frac{n(n-1) \cdot A^2 x^2}{1 \cdot 2} + \dots$

$$\begin{cases} n \cdot A = -\frac{1}{3} \\ \frac{n(n-1) \cdot A}{2} = \frac{5}{36} \end{cases}$$
$$n(n-1) \cdot A = \frac{5}{18}$$
$$An^2 - An = \frac{5}{18} \quad \text{--- (1)}$$

Sub  $n = -\frac{1}{3A}$  into (1)

Sub  $A = -\frac{1}{3n}$  into (1)

$$-\frac{1}{3n} \cdot n^2 - (-\frac{1}{3n}) \cdot n = \frac{5}{18}$$
$$-\frac{1}{3}n + \frac{1}{3} = \frac{5}{18}$$

WF: 179

RESPONSE: 1217120  
DOC\_ID: 0546001022843

Q02aB	0	1
Q02aM1	0	1
Q02aM2	0	1
Q02aM3	0	1
Q02aA1	0	1
Q02aA2	0	1
Q02bM	0	1
Q02bA	0	1

# A sample screenshot of what the Team Leader will see.

Examiner marks

TL marks

WF: 179

RESPONSE: 1217120

DOC\_ID: 0546001022843

Q02aB	0	1	0	0
Q02aM1	0	1	1	1
Q02aM2	0	1	1	1
Q02aM3	0	1	0	0
Q02aA1	0	1	0	0
Q02aA2	0	1	0	0
Q02bM	0	1	0	0
Q02bA	0	1	0	0

1ST

591668

BKR

535889TL

Skip

Exit Scoring

Other Actions

2 Given that

$$1 - \frac{1}{3}x + \frac{5}{36}x^2 + \dots$$

is the binomial expansion, in ascending powers of  $x$ , of  $(1 + Ax)^n$ , where  $A$  and  $n$  are rational numbers,

(a) find the value of  $A$  and the value of  $n$

(6)

(b) Hence find the value of the coefficient of  $x^3$

Give your answer in the form  $-\frac{p}{q}$  where  $p$  is a prime number and  $q$  is an integer.

(2)

$$(1 + Ax)^n = 1 + n \cdot Ax + \frac{n(n-1) \cdot A^2 x^2}{1 \cdot 2} + \dots$$

$$\begin{cases} n \cdot A = -\frac{1}{3} \\ \frac{n(n-1) \cdot A}{2} = \frac{5}{36} \end{cases}$$
$$n \cdot A = -\frac{1}{3}$$
$$A n^2 - A n = \frac{5}{18}$$

Sub  $n = -\frac{1}{3A}$  into ①

Sub  $A = -\frac{1}{3n}$  into ②

$$-\frac{1}{3n} \cdot n^2 - (-\frac{1}{3n}) \cdot n = \frac{5}{18}$$
$$-\frac{1}{3}n + \frac{1}{3} = \frac{5}{18}$$
$$-\frac{1}{3}n = \frac{5}{18} - \frac{1}{3}$$
$$n = \frac{1}{6}$$

Sub  $n = \frac{1}{6}$  into  $n \cdot A = -\frac{1}{3}$

$$\frac{1}{6} \cdot A = -\frac{1}{3}$$

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# Examiner recruitment and training

# Initial examiner recruitment

Examiners can apply to mark for Edexcel using this website

<https://qualifications.pearson.com/en/support/support-for-you/assessment-associates/vacancies/working-with-us.html>

Overview

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Vacancies

Working with us

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As an awarding organisation Pearson mark over 9 million exam papers a year worldwide, covering more than 150 different qualifications including: GCSE, International GCSE, AS, A level, International AS/A level, BTEC, T Level, End Point Assessment, NVQ and more.

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\*Assessment associate is a term we use for those involved in assessment work for Pearson, for example, examiners or external verifiers.

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Training and support ▾

...

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# Apply to become an examiner

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  - Payment Detail
  - Payroll Self Service
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  - Start a Pension
  - Stop a Pension
  - Pension Dashboard
- My Travel
- iExpenses
- My BTEC Next Generation External Units
- Reports and Marks
  - Moderator Report/Mark Search
  - Monitor Report/Grade Search
  - NVQ Online Report
  - NVQ Allocation Report Enquiry
  - Historic Reports
  - Edexcel BTEC Higher Level Programmes
  - Extended Project
  - BTEC NQF/RQF
  - Skilled For Life QA

## Search results

14 matching jobs found

Your search criteria Keywords: Mathematics;

### Examiner - GCE A Level - Mathematics (2017 Specification)

A GCE Maths (2017 Specification) Examiner marks candidates' responses in accordance with the pre-defined mark scheme, whilst adhering to conditions of recognition and examination procedures. Most subjects will be marked onscreen using ePEN, which can be done from home. A few subjects are still ... [Read more](#)

### Examiner - GCE A Level Further Mathematics (2017 specification)

A GCE Further Mathematics (2017 Specification) Examiner marks candidates' responses in accordance with the pre-defined mark scheme, whilst adhering to conditions of recognition and examination procedures. Most subjects will be marked onscreen using ePEN, which can be done from home. A few subj ... [Read more](#)

### Examiner - GCSE- Mathematics (2015 specification)

A GCSE Mathematics Examiner (2015 specification) will mark candidates' responses in accordance with the pre-defined mark scheme, whilst adhering to conditions of recognition and examination procedures. Most subjects will be marked onscreen using ePEN, which can be done from home. A few subject ... [Read more](#)

### Examiner - International Advanced Level - Decision Mathematics (2018 specification)

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<ul style="list-style-type: none"> <li>ePEN Distribution Profile (Allocation) &amp; Item Fees</li> <li>Payment Detail</li> <li>Payroll Self Service</li> </ul>
My Pension
<ul style="list-style-type: none"> <li>Start a Pension</li> <li>Stop a Pension</li> <li>Pension Dashboard</li> </ul>
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My BTEC Next Generation External Units
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Forms and Guidance

## Examiner - International Advanced Level - Decision Mathematics (2018 specification)

Reference: Ex/IALDM/2018spec

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An International Advanced Level Decision Mathematics Examiner will mark candidates' responses in accordance with the pre-defined mark scheme, whilst adhering to conditions of recognition and examination procedures. Most subjects will be marked onscreen using ePEN, which can be done from home. A few subjects are still marked in the traditional method, using paper scripts sent through the post. A high level of subject knowledge is necessary in order to apply the mark scheme. Each examiner will receive an agreed allocation of scripts.

We are also recruiting for the following:

[Examiner - International Advanced Level Pure Mathematics \(2018 Specification\)](#)

[Examiner - International Advanced Level Statistics \(2018 Spec\)](#)

[Examiner - International Advanced Level Further Pure Mathematics \(2018 specification\)](#)

[Examiner - International Advanced Level Mechanics \(2018 specification\)](#)

### Responsibilities

- To mark accurately and consistently to ensure overall standards are maintained
- To submit samples to your Team Leader at designated times
- To ensure milestones for marking are adhered to
- To ensure all administration is completed as specified

### Experience/ Qualifications Needed

- You will have one academic year's worth of teaching experience:
  - within the last 8 years
  - within the relevant qualification and subject
- You will have a degree or equivalent

### Competencies Required

- You will have the ability to work well under pressure
- You will have the ability to meet deadlines
- You will have a high level of subject knowledge in order to apply the mark scheme

### Additional Information

- The marking period is between May - July.

## Initial Examiner training

On successful appointment as an examiner, you will be offered a contract:

- Once a contract is accepted, all new examiners will be contacted to complete some initial training.
- The new examiner will be sent a mark scheme with some responses to mark.
- The new examiner marks the responses and send the marks to the Principal Examiner.
- This is then checked and the PE feeds back to the New Examiner.

## Qualifying to mark a paper

These are the steps **every** examiner **must** undertake to qualify to mark **ANY** paper.

1. 24 hours after the examination takes place, examiners download the paper and the mark scheme from Edexcel Gateway.
2. The examiner completes the paper and marks their own work using the mark scheme. Anything not understood/not clear must be communicated to the Team leader – who may clarify immediately or take comments to the Standardisation meeting.
3. After Epen is set up by the senior team on the paper, examiner must first complete Practice scripts. [There are usually between 5 and 7 of these]
4. After Practice has been completed, 10 Qualification scripts are marked. An accuracy of at least 90% must be achieved in order to qualify to mark. The TL will at this stage feedback on any errors and if necessary, ask the examiner to mark 15 examples of each question and stop until they have been cleared to mark their allocation.
5. The examiner is now qualified and cleared to mark!



# Final steps

## After marking

- The marks are processed and the statistical work is completed.
- The Principal Examiner prepares a report for the awarding committee [and also the Examination Report for publication post results day]
- Following statistical analysis the Awarding Meeting takes place. The awarding committee is comprised of the Chair of Examiners, the Principal Examiners and the Subject Officer from Edexcel. The meeting is recorded for the purposes of the Examination Regulator.
- The committee inspects scripts beforehand at around the proposed grade boundaries. The committee agrees on the boundary that will be submitted to the Awarding Body for approval.
- On Results Day – candidates receive their grades!

# Examiner Reports

#### **Question 3**

Despite this being early on in the paper, the full range of marks were awarded. Both methods from the mark scheme were often seen, dividing the exterior angle (18) into 360 or setting up and solving an equation using the sum of interior angles formula. Some candidates reached 162 and used a trial and improvement method; if the correct answer was reached then 4 marks were awarded, otherwise only 1 mark for 162. Some candidates were able to produce a method to find the interior angle but could go no further as they could not make the link between the interior and exterior angle or use the sum of interior angles formula.

# Examiner report

## Paper 1H

June 2025

### Question 24

#### Question 24

This question saw mixed results, although some did manage to work with the equations for  $U_{20}$  and  $S_{30}$  and go on to gain correct values for  $a$  and  $d$ . Of those that didn't, most gained 0 or 1 mark, with 1 mark usually being for a correct equation for  $S_{30}$ , presumably as this is given on the formula sheet on page 2 of the exam paper. For most of those who did gain 2 marks for two correct equations, incorrect algebraic simplification let them down and once errors had been made no further marks could be gained.

# Examiner report

## Paper 1H

### A summary of advice to centres

#### Summary

Based on their performance in this paper, candidates should:

- be thoroughly confident with their method and avoid instances where an incorrect method and answer is given on the answer line and a fully correct method and answer is given elsewhere in the workspace.
- practise problems involving interior and exterior angles
- ensure algebraic fractions are fully simplified if asked and ensure that care is taken when transferring expressions from one line of working to the next
- take care with the inequality sign when solving inequalities
- understand what is meant by the term 'proportion' e.g. in Question 17
- interpret the initial information correctly in direct or inverse proportion questions to enable them to set up a correct initial equation
- practise graph transformations
- not make assumptions for geometric diagrams as they are not accurately drawn
- practise conditional probability problems
- ensure squared brackets are expanded correctly e.g.  $(x + 2)^2 = x^2 + 4x + 4$   
not  $x^2 + 4$
- practise vector problems
- practise arithmetic series problems and be familiar with the formula for the  $n$ th term
- practise problems involving perpendicular lines

## ACTIVITY 2

### Using examination reports

How could you use the Principal Examiner reports in your schools/centres?

# Marking student responses

## Mark Codes



## Mark codes

- M.** marks are awarded for a correct application of a method, or a correct attempt.  
M marks can be dependent so that if a previous M mark is not scored, the subsequent M mark may not be either
- A.** marks are awarded for a correct answer subject to a correct method being used.  
The marking combination M0A1 is not possible
- B.** marks are independent marks, usually for a 'write down'

## Other abbreviations

**Ft** means follow through. Applied on some A or B marks

**bod** benefit of doubt

**isw** ignore subsequent working

**cao** correct answer only

**cso** correct solution only

**d** or **dep** is a dependent M mark

# Marking student responses

## 1. Short Response questions

# An example of a short response question

## Q3 Paper 1H June 2025

### This is a 3 mark question

5

In a sale, normal prices are reduced by 28%  
The sale price of a watch is 198 euros.

Work out the normal price of the watch.

Activity 3

Complete this question **WITHOUT** reference to the mark scheme, and then check your own answer.

5	eg $1 - 0.28 (= 0.72)$ oe <b>or</b> $0.72x = 198$ <b>or</b> $100(\%) - 28(\%) (= 72(\%))$ <b>or</b> $\frac{198}{72} (= 2.75)$ oe		3	M1 for a correct first step
	eg $(x = ) 198 \div "0.72"$ oe <b>or</b> $198 \div "72" \times 100$ oe <b>or</b> $"2.75" \times 100$			M1 for a complete method
	<i>Correct answer scores full marks (unless from obvious incorrect working)</i>	275		A1 cao
				<b>Total 3 marks</b>

We will mark this response together

M1 – for the correct first step.  
They have established that the multiplier is 72% or 0.72

M1 – for a correct second step.  
They divide 198 by 72 and in the next line multiply it by 100.  
This is the equivalent of  $198/0.72$

A0 – incorrect final answer.

- 5 In a sale, normal prices are reduced by 28% → 72% original price  
The sale price of a watch is 198 euros.

Work out the normal price of the watch.

$$€198 = 72\%$$

$$\frac{198}{72} = 1\% = 2.6$$

$$\begin{aligned} 100\% &= 2.6 \times 100 = 266.6 \\ &= 266.67 \\ &= 267 \end{aligned}$$

267

(Total for Question 5 is 3 marks)

Here is another response we can look at together. How would this be marked?

Notice the correct fully worked solution is given in the LH corner.

The answer on the answer line however, must take precedence, and the method leading to that answer is worth 0 marks. This was therefore awarded 0 marks.

5 In a sale, normal prices are reduced by 28%  
The sale price of a watch is 198 euros.

Work out the normal price of the watch.

$x - 28\% = 198$   
 $198 + 28\% = x$

$100 + 28 = 128\%$   
 $= 1.28$   
 $198 \times 1.28 = 253.44$

$\left( \begin{array}{l} 100 - 28 = 72 \\ = 0.72 \\ \frac{198}{0.72} = 275 \end{array} \right)$

$100 + 28 = 128\%$   
 $= 1.28$   
 $\frac{28}{100} \times 198 = 55.44$   
 $198 + 55.44 = 253.44$

$253.44$  euros

(Total for Question 5 is 3 marks)

# Activity 4 –

## Activity 4 Question 3 Paper 2H [Grade 4] 2025

In your Delegate Packs there are two student responses on this question for you to mark. This question was highlighted in the PE report as poorly answered.

You will be now be marking to examination board standard [imagine you're an examiner working for Edexcel] – so please mark this using the codes M1, A1 when you see them scored. If it does not score – then write M0 etc.

**3** Show that  $7\frac{1}{3} - 3\frac{4}{7} = 3\frac{16}{21}$



## And here is the mark scheme for this question

Question	Working	Answer	Mark	Notes
3	$\frac{22}{3}(-)\frac{25}{7}$ or $(7)\frac{7}{21}(-)(3)\frac{12}{21}$ or $(7)\frac{7a}{21a}(-)(3)\frac{12a}{21a}$		3	M1 for correct improper fractions or fractional part of numbers written correctly over a common denominator
	$\frac{154}{21} - \frac{75}{21}$ or $\frac{22 \times 7}{21} - \frac{25 \times 3}{21}$ or $\frac{22 \times 7 - 25 \times 3}{21}$ $\frac{154a}{21a} - \frac{75a}{21a}$ or $7\frac{7}{21} - 3\frac{12}{21} = 4 - \frac{5}{21}$ oe or $7\frac{7}{21} - 3\frac{12}{21} = 6\frac{28}{21} - 3\frac{12}{21}$			M1 for correct fractions with a common denominator with minus sign or mixed numbers to the stage shown  $\frac{154}{21} - \frac{75}{21}$ or $\frac{22 \times 7}{21} - \frac{25 \times 3}{21}$ implies the first M1
	$\frac{154}{21} - \frac{75}{21} = \frac{79}{21} = 3\frac{16}{21}$ or $4 - \frac{5}{21} = 3\frac{16}{21}$ or $7\frac{7}{21} - 3\frac{12}{21} = 6\frac{28}{21} - 3\frac{12}{21} = 3\frac{16}{21}$  <i>Working required</i>	A fully correct solution shown		A1 Dep on M2 for a correct answer from fully correct working  If a student shows that $3\frac{16}{21} = \frac{79}{21}$ then they must show correct working to $\frac{79}{21}$ and can gain full marks for this
				<b>Total 3 marks</b>

# Answers to activity 4

**Response 1**     M1 for  $22/3 - 25/7$   
  
                         M1 for  $154/21 - 75/21$   
  
                         A0 for not showing  $79/21 = 316/21$

**Response 2**     This is an acceptable method as the student shows LHS = RHS  
                         M1 for  $22/3 - 25/7 = 79/21$   
  
                         M1A1 for  $154/21 - 75/21 = 79/21$

This is the examiner report in this question – bear in mind it is a ‘Show’ question

### Question 3

Most candidates now know what is expected of them in a 'show that' question and it was pleasing to see many answers gaining full marks, clearly understanding the need to show either  $\frac{79}{21} = 3\frac{16}{21}$  as their final stage or that  $3\frac{16}{21} = \frac{79}{21}$  as the first stage of working.

Candidates who lost marks generally went straight from  $\frac{22}{3} - \frac{25}{7}$  to  $\frac{79}{21}$  failing to show  $\frac{154}{21} - \frac{75}{21}$ .

Candidates who separated the whole numbers and fractions and dealt with them in two parts often did not have sufficient method for a 'show that' question, going straight from  $7\frac{7}{21} - 3\frac{12}{21}$  to  $3\frac{16}{21}$ , failing to show  $6\frac{28}{21} - 3\frac{12}{21}$  and that  $6 - 3 = 3$

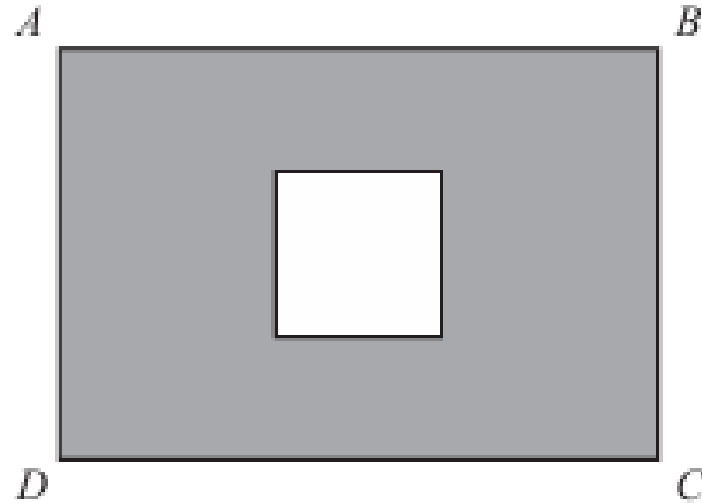
Very few candidates did not know that a common denominator was needed, but those who scored no marks generally made an error with writing the fractions as improper fractions with  $\frac{26}{7}$  seen instead of  $\frac{25}{7}$ .

# Marking student responses

## 2. Medium Response questions

22 The diagram shows a square inside rectangle  $ABCD$

Diagram **NOT**  
accurately drawn



The total area of the region shown shaded in the diagram is  $X\text{cm}^2$

$AB = 11.5\text{ cm}$  correct to the nearest  $0.5\text{ cm}$

$BC = 9.2\text{ cm}$  correct to 2 significant figures

side of square  $= 4.1\text{ cm}$  correct to 2 significant figures

By considering bounds, work out the value of  $X$  to a suitable degree of accuracy.  
Show your working clearly.

Activity 5  
Complete this  
question  
**WITHOUT**  
reference to the  
mark scheme,  
and then check  
your own answer.

It was allocated 4  
marks

# Question 22 Paper 2H Mark Scheme

Question	Working	Answer	Mark	Notes
22	11.25, 11.75, 9.15, 9.25, 4.05, 4.15		4	B1 for a correct bound  Accept $\dot{11.749}$ for 11.75 or $\bar{11.749}$ for 11.75 $\dot{9.249}$ for 9.25 or $\bar{9.249}$ for 9.25 $\dot{4.149}$ for 4.15 or $\bar{4.149}$ for 4.15
	$11.75 \times 9.25 - 4.05^2 (= 92.285)$			M1 for a correct method to find the UB of $X$ , allow $(11.5 < AB \leq 11.75) \times (9.2 < BC \leq 9.25) - ((4.05 \leq s < 4.1)^2)$
	$11.25 \times 9.15 - 4.15^2 (= 85.715)$			M1 for a correct method to find the LB of $X$ , allow $(11.25 \leq AB < 11.5) \times (9.15 \leq BC < 9.2) - ((4.1 < s \leq 4.15)^2)$
	<i>Working required</i>	90		A1 dep on M2 90 and both UB and LB correct using correct values 11.25, 11.75, 9.15, 9.25, 4.05 and 4.15
				<b>Total 4 marks</b>

# Candidate response

## Q22 Paper 2H

We'll mark this together

B1 – For a correct bound.  
Notice how the candidate has made life difficult by not using the correct [but allowable] LB

M1 for 11.749 9.248 4.052 [all the values are within allowable ranges]

M1 for 11.25 9.15 4.1492 [all values within allowable ranges]

A0

$D$   $C$

The total area of the region shown shaded in the diagram is  $X\text{cm}^2$

$AB = 11.5\text{ cm}$  correct to the nearest  $0.5\text{ cm}$

$BC = 9.2\text{ cm}$  correct to 2 significant figures

side of square =  $4.1\text{ cm}$  correct to 2 significant figures

By considering bounds, work out the value of  $X$  to a suitable degree of accuracy.  
Show your working clearly.

$$11.5 \times 9.2 = 105.8$$

$$4.1 \times 4.1 = 16.81$$

$$105.8 - 16.81 = 88.99$$
$$\approx 89.0$$

$$l.b = 11.25 \times 9.15 - (4.149)^2$$
$$= 85.7$$

$$u.b = 11.749 \times 9.249 - 4.05^2$$
$$= 92.3$$

$$\frac{85.7 + 92.3}{2} = 88.98$$
$$\approx 89.0$$

$$X = 89.0$$

(Total for Question 22 is 4 marks)

# Activity 6

**There are two examples  
for you to mark.**



# Activity 6 Answers

**Response 1**      B1 for a correct bound  
M0 for an incorrect method to find the UB  
M0 for not showing a method to find the LB  
A0 follows - dep on M2

**Response 1**      B1 for a correct bound  
M1 for 11.75   9.25   4.052  
M0 for not showing a method to find the LB  
A0 dep on M2

# What did the examiner report say?

## Question 22

Combining the area of compound shapes with error bounds confused many candidates. It was common to see them concentrating on the area of the rectangles, using the given values, and then attempting to give an upper bound or a lower bound for their answer.

Bounds for significant figures were well done, but many students made an error in finding the bounds for 11.5 with 11.45 and 11.55 common incorrect bounds.

Candidates should be encouraged when answering these questions to list the appropriate upper and lower bounds before starting to solve the problem. This will usually enable them to gain the first B mark even if they can progress no further. Many candidates gained one mark for correctly identifying a correct value for a bound. Those candidates who understood what was required often failed to find the suitable degree of accuracy required ie 90. A common error was to find the upper and lower bounds and then find the average of the two values leading to an incorrect final answer.

Those that were able to work with limits often failed to understand which bounds to use in the calculation to give the upper bound or the lower bound ie they worked out  $11.75 \times 9.25 - 4.15^2$  or  $11.25 \times 9.15 - 4.05^2$ . some candidates could gain 3 marks for substituting their values of bounds between the ranges given.

# Marking student responses

## 3. Extended Response questions

This is an example of an extended response question. June 2025 Question 17 Paper 2H. In 4MA1 these questions are limited to 6 possibly 7 marks.

This is an extended response question because part (b) relies on the work completed in part (a)

Part (a) is 2 marks

Part (b) is 4 marks

Activity 7 – Please now mark the two responses of Question 17 in the booklet.

17  $y = 4x^3 + 5x^2 + 2x$

(a) Find  $\frac{dy}{dx}$

(b) Find the coordinates of the turning points on the graph with equation  $y = 4x^3 + 5x^2 + 2x$   
Show clear algebraic working.

# Mark Scheme

## Q17 paper 2H June 2025

Question	Working	Answer	Mark	Notes
17(a)	Two of $12x^2 + 10x + 2$		2	M1 for differentiating 2 or 3 terms correctly
		$12x^2 + 10x + 2$		A1 for all 3 terms correct
(b)	$(3x + 1)(4x + 2) (= 0)$ or $(6x + 2)(2x + 1) (= 0)$ or $2(3x + 1)(2x + 1) (= 0)$ or $(3x + 1)(2x + 1) (= 0)$ $\frac{-10 \pm \sqrt{10^2 - 4 \times 12 \times 2}}{2 \times 12}$ or $\frac{-5 \pm \sqrt{5^2 - 4 \times 6 \times 1}}{2 \times 6}$ or $12 \left[ \left( x + \frac{10}{24} \right)^2 - \left( \frac{10}{24} \right)^2 \right] + 2 (= 0)$ oe or $6 \left[ \left( x + \frac{5}{12} \right)^2 - \left( \frac{5}{12} \right)^2 \right] + 1 (= 0)$ oe		4	M1 fit dep on M1 for a correct method to solve their <b>3 term quadratic</b> equation (with at least 2 correct coefficients) using any correct method (if factorising, allow brackets which expanded give 2 out of 3 terms correct) (if using formula allow one sign error and some simplification – allow as far as $\frac{-10 \pm \sqrt{100 - 96}}{24}$ ) Derivative must be a <b>3 term quadratic</b> for this M mark NB Can be implied by answers of $(x =) -\frac{1}{2}$ <b>and</b> $(x =) -\frac{1}{3}$
		$-\frac{1}{2}, -\frac{1}{3}$		A1 oe dep on previous M1 Allow $-0.33(333)$ or $-0.\dot{3}$ for correct $x$ values
	$(y =) 4 \times \left( -\frac{1}{2} \right)^3 + 5 \left( -\frac{1}{2} \right)^2 + 2 \left( -\frac{1}{2} \right) \left( = -\frac{1}{4} \right)$ or $(y =) 4 \times \left( -\frac{1}{3} \right)^3 + 5 \left( -\frac{1}{3} \right)^2 + 2 \left( -\frac{1}{3} \right) \left( = -\frac{7}{27} \right)$			M1 fit dep on previous M1 for substituting at least one $x$ value into $y$ NB Can be implied by one correct value of $y$
	Working required	$\left( -\frac{1}{2}, -\frac{1}{4} \right)$ $\left( -\frac{1}{3}, -\frac{7}{27} \right)$		A1 oe dep on M1 for correct coordinates $(-0.5, -0.25), (-0.33, -0.25(9...))$
Total 6 marks				

# Answers to Q17

**Response 1** (a) M1A1 for  $12x^2 + 10x + 2$   
(b) M1A1 for  $x = 1/3$  and  $x = 1/2$   
M1 for  $-7/27$  (this M mark can be implied by 1 correct value of  $y$ )  
A0

**Response 2** (a) M1A1 for  $12x^2 + 10x + 2$   
(b) M1 for substituting into the quadratic formula correctly  
(can be implied by 2 correct values of  $x$ )  
A0 for incorrect values of  $x$   
M1 for substituting their  $x$  value(s) into the  $y$  equation to  
find the  $y$  value(s)  
A0

Here is another example of an extended response question.

This question is on page 25 of the booklet and comes from Paper 2H June 2025

Question 20

Candidates should be aware that in questions like these, parts (b), and then part (b) and (c) rely on part (a).

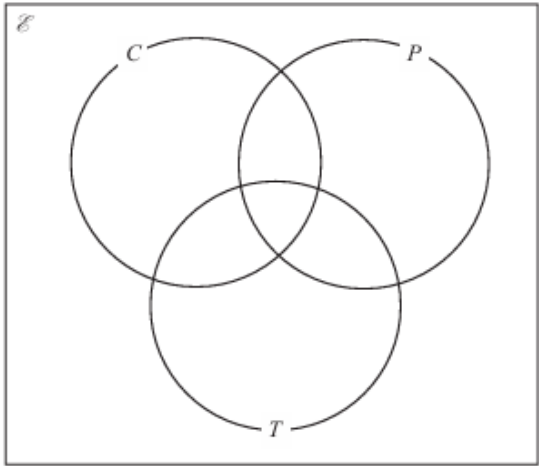
20 120 gardeners were asked if they grow carrots ( $C$ ) or potatoes ( $P$ ) or tomatoes ( $T$ )

Of these gardeners

- 43 grow carrots
- 12 grow carrots and potatoes and tomatoes
- 18 grow carrots and potatoes
- 27 grow carrots and tomatoes
- 32 grow potatoes and tomatoes
- 29 do not grow carrots or potatoes or tomatoes

The number of these gardeners who grow only potatoes is equal to the number of these gardeners who grow only tomatoes.

(a) Complete the Venn diagram to show this information.



(3)

(b) Find  $n(T \cap C)$

(1)

One of the gardeners who grows carrots is chosen at random.

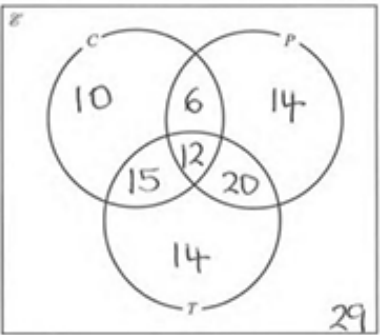
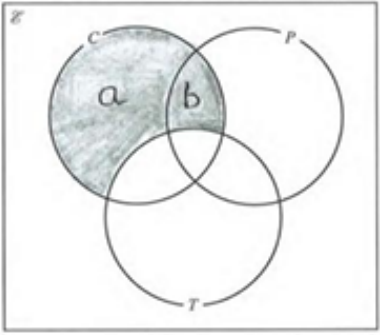
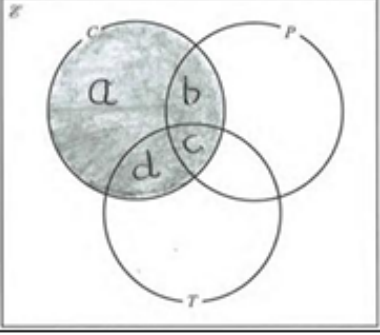
(c) Calculate the probability that this gardener also grows potatoes.

(2)

(Total for Question 20 is 6 marks)

Mark Scheme

Q20  
paper 2H  
June 2025

20	(a)		$\begin{array}{r} 10\ 6\ 14 \\ 15\ 12\ 20 \\ 14 \\ 29 \end{array}$	3	B3 for all numbers in correct regions (B2 for 5, 6 or 7 correct numbers B1 for 3 or 4 correct numbers)
	(b)		16	1	B1 fit for their $a +$ their $b$  Do not fit if there are no values for $a$ and $b$
	(c)			2	M1 for $\frac{n}{43}$ where $n < 43$ or $\frac{18}{m}$ where $m > 18$ or fit their $\frac{b+c}{p}$ where $p > b + c$ or fit their $\frac{q}{a+b+c+d}$ where $q < a + b + c + d$ Do not fit if there are no values for $a, b, c$ and $d$
			$\frac{18}{43}$		A1 oe eg 0.41(860...) or 41(.860...) % truncated or rounded or fit their $\frac{b+c}{a+b+c+d}$ as a fraction or a decimal or a percentage
Total 6 marks					



# Answers to Q20

**Response 1** (a) B2 for 6 correct numbers  
(b) B1ft for their  $(a + b)$   
(c) M1 for  $18/m$  where  $m > 18$   
A0 incorrect answer.

**Response 2** (a) B2 for 5 correct numbers  
(b) B1ft for their  $(a + b)$   
(c) M1ft A1ft  $(b + c)/(a + b + c + d)$  to give  $18/61$

# Marking student responses

## 4. 'Show' questions

Here is an example of a  
'show' question

This question is from  
another Pearson  
International GCSE paper  
and illustrates the need to  
always show ALL working  
**especially in a show  
question** very clearly.

3

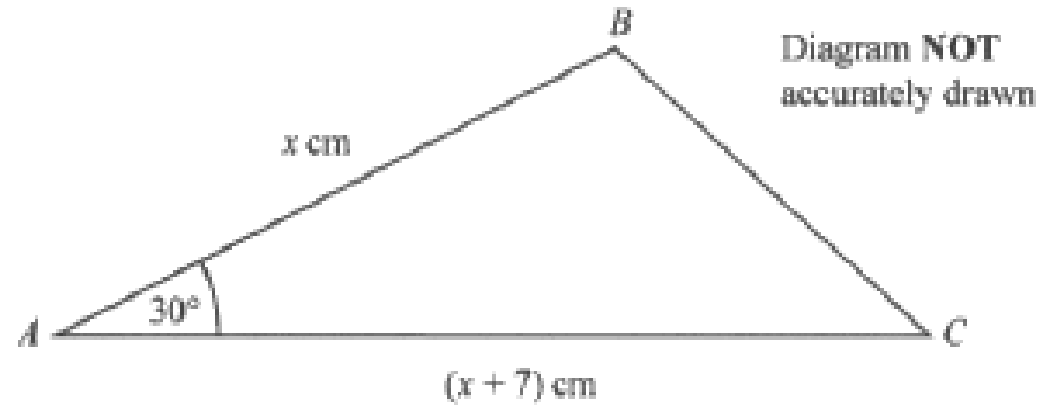


Figure 1

Figure 1 shows triangle  $ABC$  where

$$AB = x \text{ cm} \quad AC = (x + 7) \text{ cm} \quad \angle BAC = 30^\circ$$

The area of triangle  $ABC = 36 \text{ cm}^2$

(a) Show that  $x = 9$

(3)

## Activity 8

In the delegate booklet are 4 examples of a simple ‘show that’ question.

Just mark part (a)

**Each** response has successfully and correctly found that  $x = 9$  [cm]

However, how many marks would you award to each response?

A – M1M1A1 – full working is seen – this is a model answer

B – M1M1A1 – full working is seen this time using the formula.

C – M1M0A0 – The application of the area of a triangle is correct for M1, but there is no method **seen** to solve the resulting 3TQ.

D – M1M1A1 – When multiple attempts at a question are seen, we mark each one and score the lowest. However, in this case we gave bod that the candidate is not presenting two solutions for the examiner to choose so we marked the solution to the 3TQ presented on page 2 of their working.

# Introducing Modular International GCSE

# Modular exam structure

The modular and linear approach contact the same content, but the modular approach breaks the journey into two units with an exam at the end of each unit.

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>• Grad 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>• Grad 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>• Grad 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>• Grad range: 9-4 with an allowable grade 3</li></ul>
<b>For each unit exam, a formulae sheet will be included, and the use of a calculator is permitted.</b>	
<b>Exactly 40% of questions are the same across Foundation and Higher Tier papers.</b>	

# Modular content summary

The modular and linear approach contact the same content, but the modular approach breaks the journey into two units with an exam at the end of each unit.

Unit 1	Unit 2
<p>Number (AO1)</p> <ul style="list-style-type: none"><li>• Basic number skills</li><li>• Standard form</li><li>• Limits of accuracy</li><li>• <b>Surds and indices</b></li></ul>	<p>Number (AO1)</p> <ul style="list-style-type: none"><li>• Ratio and proportion</li><li>• Percentage skills</li><li>• Standard form</li><li>• <b>Repeated percentage change</b></li></ul>
<p>Algebra (AO1)</p> <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>• <b>Solving quadratics <math>ax^2 + bx + c = 0</math></b></li><li>• <b>Completing the square</b></li><li>• <b>The quadratic formula</b></li></ul>	<p>Algebra (AO1)</p> <ul style="list-style-type: none"><li>• Inequalities</li><li>• Simultaneous equations</li><li>• Sequences</li><li>• Change of subject</li><li>• <b>Algebraic proof</b></li><li>• <b>Direct and inverse proportion</b></li><li>• <b>Summation of arithmetic series</b></li><li>• <b>Function notation and transformations</b></li><li>• <b>Differentiation</b></li></ul>
<p><b>Topics in black: studied by both Foundation and Higher Tiers students</b> <b>Topics in red: studied by Higher Tier students only.</b></p>	

Unit 1	Unit 2
<p>Shape, Space and Measure (AO2)</p> <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>	<p>Shape, Space and Measure (AO2)</p> <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>
<p>Handling Data (AO3)</p> <ul style="list-style-type: none"> <li>• Basic probability</li> <li>• Tree diagrams</li> <li>• Conditional probability</li> <li>• Histograms</li> </ul>	<p>Handling Data (AO3)</p> <ul style="list-style-type: none"> <li>• Statistical measure</li> <li>• Cumulative frequency diagrams</li> </ul>
<p><b>Topics in black: studied by both Foundation and Higher Tiers students</b>  <b>Topics in red: studied by Higher Tier students only.</b></p>	



# Teaching and planning in a Modular Way

Planning your teaching, producing a scheme of work

You may want to change the way you teach the International GCSE Mathematics A Specification Content if you take the Modular route for assessment.

- To support your planning and teaching of the course, we are **producing course planners, editable schemes of work** and **Getting Started Guide**.

**The editable schemes of work are in Word so that you can copy and paste them/adjust them**

**to suit the needs of your school.**

- First teaching for International GCSE Mathematics A (Modular) is September 2024
- First assessment of International GCSE Mathematics A (Modular) is May/June 2025

# Re-sits for Modular International GCSE

- Learners can re-sit 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 International GCSE in Mathematics 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.

# Using Data to help with planning

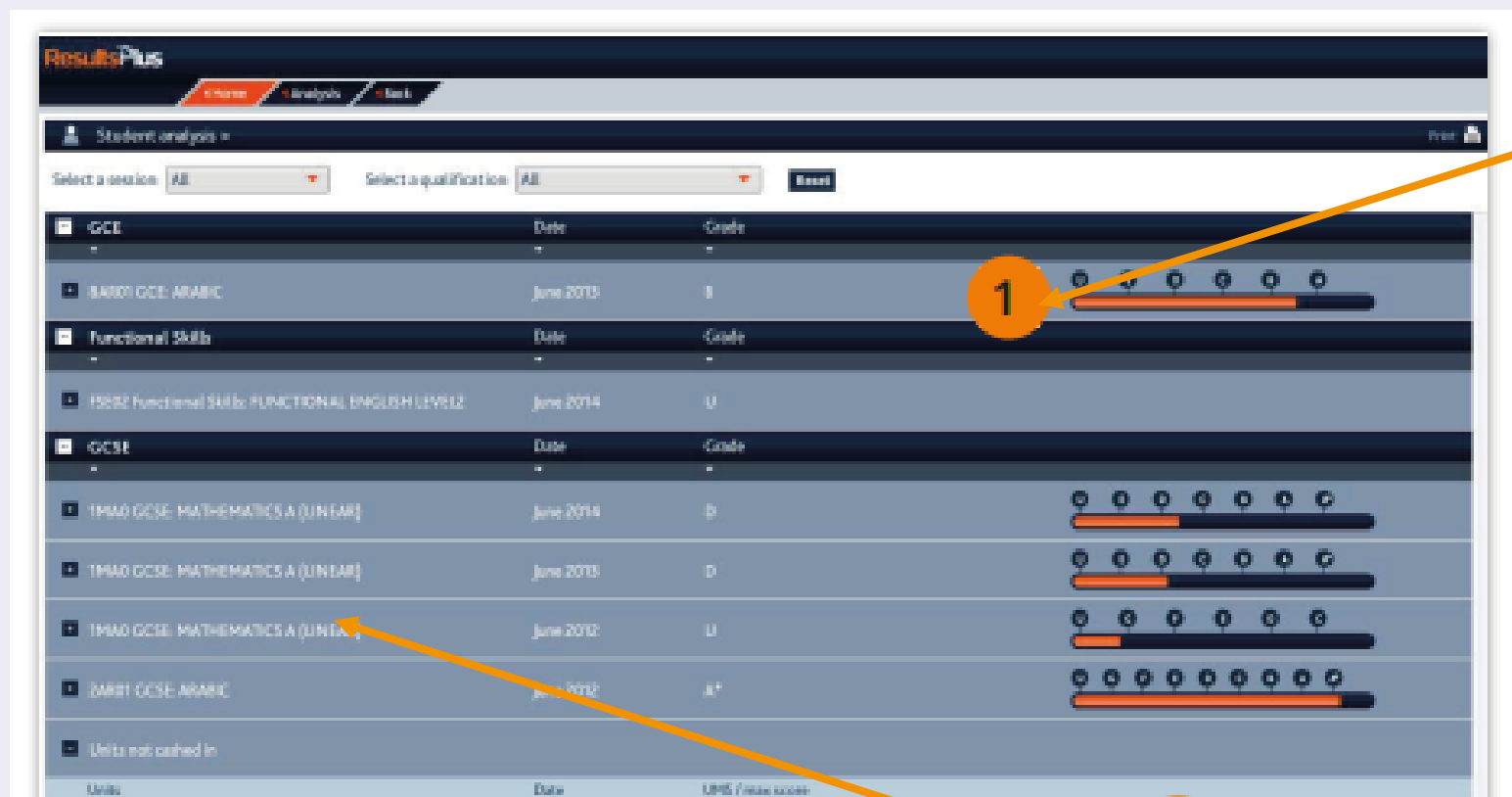
# Support for Exam preparation and post results



- Free online results analysis tool for teachers.
- Provides a detailed breakdown of student performance in Pearson Edexcel exams.
- Identify topics and questions where the student could benefit from further learning and inform teaching strategies and approaches.
- Benchmark your school's performance against other Pearson Edexcel schools in your country.
- Not just a post-results tool: Mock exam results can also be fed into the system to produce analysis.
- Find student results analysis from their previous Pearson Edexcel school.
- ResultsPlus Direct gives your students access to their final grades and performance breakdown, wherever they are.
- Schools can sign up for free ResultsPlus account in just a few quick and easy steps:  
<https://qualifications.pearson.com/en/support/Services/ResultsPlus.html>

# Using data from Results Plus to inform planning

## Student results overview



You can see how close the student was to a grade boundary

Other subjects

# Using data from Results Plus to inform planning

## Individual exam paper analysis for a student

Analysis Exam docs Highlight report Skills map Select skills map: GCSE Mathematics A (1MA0) H conte...

Paper	Date	Paper mark	Percent
Paper 1H - NON CALCULATOR (H)	June 2014	15/100	15%
Paper 2H - CALCULATOR (H)	June 2014	25/100	25%

Paper: Paper 1H - NON CALCULATOR (H) View exam paper

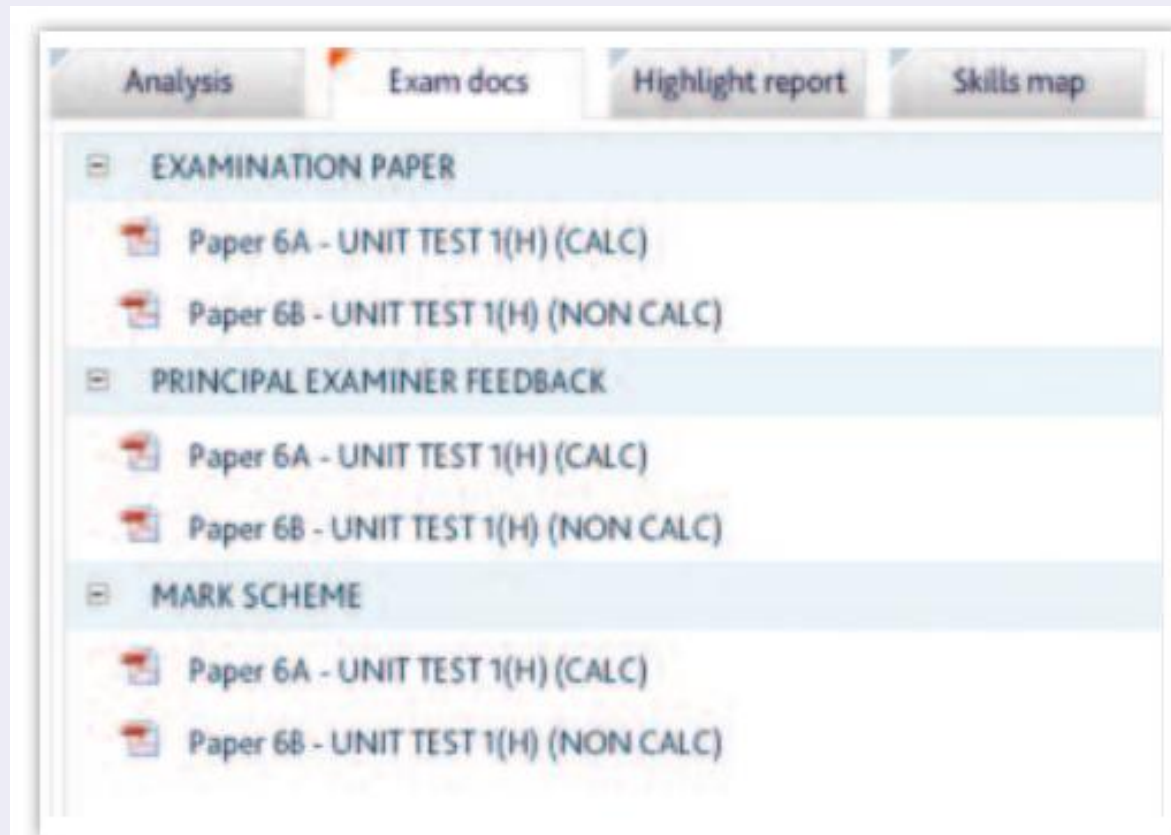
▲ Over 70% ● 35 - 70% ■ Under 35% ◆ Not tested

Question	Score	Performance	Edexcel Ave: ALL	Residual	Skill tested
Q01a	1/1	▲	0.62/1	▲	▲
Q01b	0/2	■	1.22/2	■	▲
Q02	3/3	▲	2.69/3	▲	▲
Q03	1/4	■	3/4	■	▲
Q04	0/4	■	2.48/4	■	▲
Q05	0/2	■	1.64/2	■	▲
Q06a	1/1	▲	0.73/1	▲	▲
Q06b	0/2	■	1.08/2	■	▲
Q07	1/4	■	3.13/4	■	▲
Q08	1/3	■	1.93/3	■	▲
Q09a	0/2	■	1.7/2	■	▲
Q09b	1/2	■	1.49/2	■	▲
Q10	0/3	■	2.05/3	■	▲
Q11	0/3	■	1.28/3	■	▲
Q12a	1/3	■	1.99/3	■	▲
Total:	15/100		47.32/100		

1. Select the exam paper
2. You can see the score achieved
3. You can scroll down to see the whole paper
4. You can see how well the student performed on each question. You can sort any column to identify strengths and weaknesses. You can use this in Parents evenings and in you planning a revision schedule.
5. Edexcel averages compare your students' performance with that of all students
6. These are residuals which help to compare performance against Edexcel averages
7. You can see which skills are being tested in each question
8. What curriculum topic was tested

# Using data from Results Plus to inform planning

## All examination documents



All examination papers, mark schemes and Principal examiner reports are published in Results Plus as well.



# Using data from Results Plus to inform planning

## Skills maps

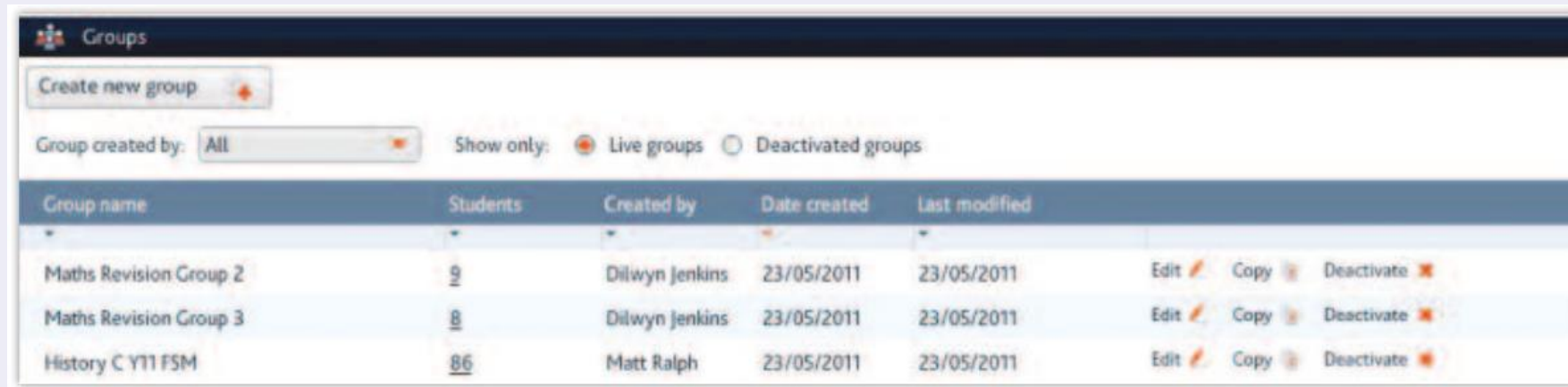
	Score	Percentage	Edexcel Ave: All s
Unit B1: Influences on life	41.4/60	69%	67%
Topic 1 - Classification, variation and inheritance	14.4/20	72%	72%
Topic 2 - Responses to a changing environment	10.7/20	53%	51%
2.1 Define homeostasis as the maintenance of a stable...	2.9/5	58%	37%
2.2 Explain why a stable internal environment is importa...	3.4/8	43%	58%
2.3 Demonstrate an understanding of how organisms are...	4.4/7	63%	57%
2.4 Demonstrate an understanding of the process of vaso...	-	-	-
2.5 Recall that the central nervous system consists of the...	-	-	-
2.6 Describe how stimulation of receptors in the sense org...	-	-	-
2.7 Investigate human responses to external stimuli	-	-	-
2.8 Describe the pathway from stimulus to response...	-	-	-
2.9 Demonstrate an understanding of a simple reflex arc...	-	-	-
2.10 Explain how a coordinated response to a stimulus is...	-	-	-

1. Skills maps allow you to see performance in skills areas.
2. You can click on a topic to see more detail
3. You can see how many marks were scored in each topic
4. How students performed relative to other candidates<sup>1</sup>
5. Some subjects have different skills maps
6. Colours indicate how well a student performed using a traffic light code.
7. You can filter the skills maps using drop down menus.



# Using data from Results Plus to inform planning

## Setting up a class/cohort groups



Groups

Create new group

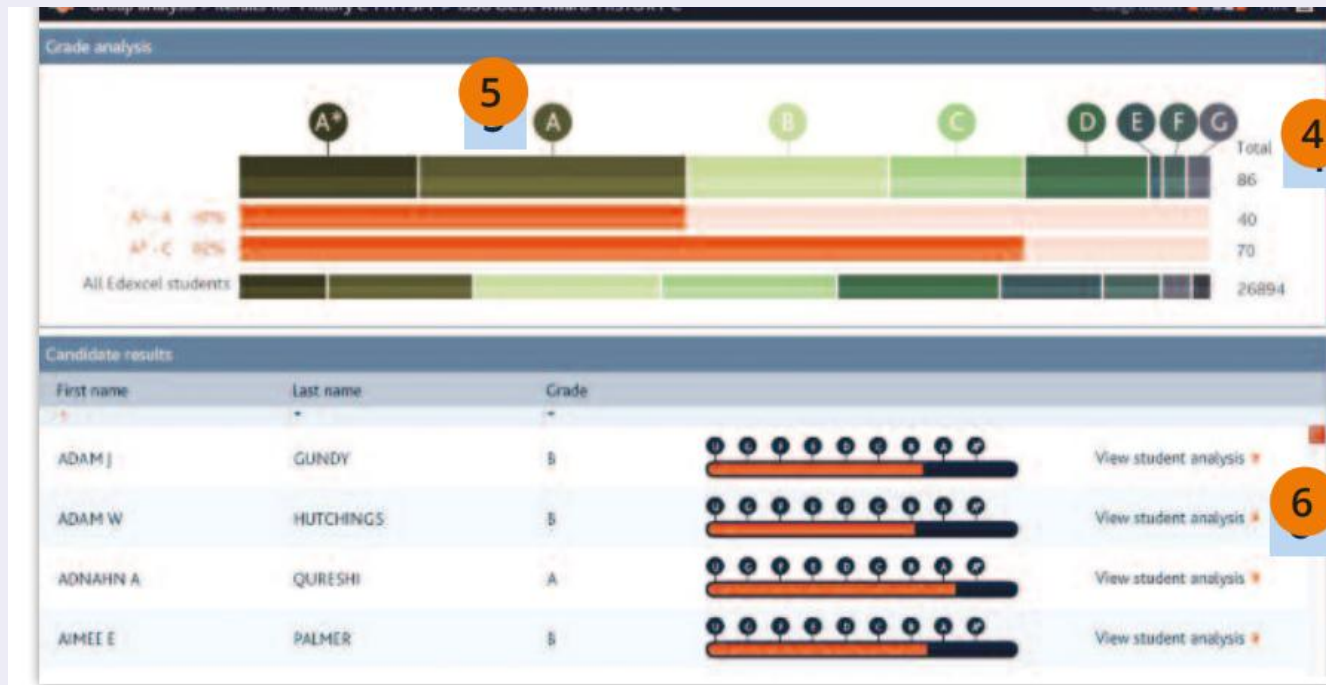
Group created by: All Show only: ☒ Live groups ☐ Deactivated groups

Group name	Students	Created by	Date created	Last modified	
Maths Revision Group 2	9	Dilwyn Jenkins	23/05/2011	23/05/2011	Edit Copy Deactivate
Maths Revision Group 3	8	Dilwyn Jenkins	23/05/2011	23/05/2011	Edit Copy Deactivate
History C Y11 FSM	86	Matt Ralph	23/05/2011	23/05/2011	Edit Copy Deactivate

- You can select a group and see how that group performed in comparison with other groups
- You can see a summary of all results in a particular group

# Using data from Results Plus to inform planning

## Group analysis



- 4. The total number of students
- 5. Hovering over the grade bar shows the number of students achieving that grade
- 6. Individual student grades are shown in that group

# Using data from Results Plus to inform planning

## Group paper analysis



ResultsPlus HIGH HOLBORN edexcel

Home Group menu Groups Back

Group analysis > Results for 'TEST Copy of 11a3 chem structured' > 5018F GCSE Unit: ADDITIONAL SCIENCE C2

Overview Analysis Exam docs Highlight reports Skills map Select skills map: GCSE Additional Science (2703) F ST...

Paper: Paper 1F - STRUCTURED PAPER C2

Over 70% 35 - 70% Under 35% Not tested

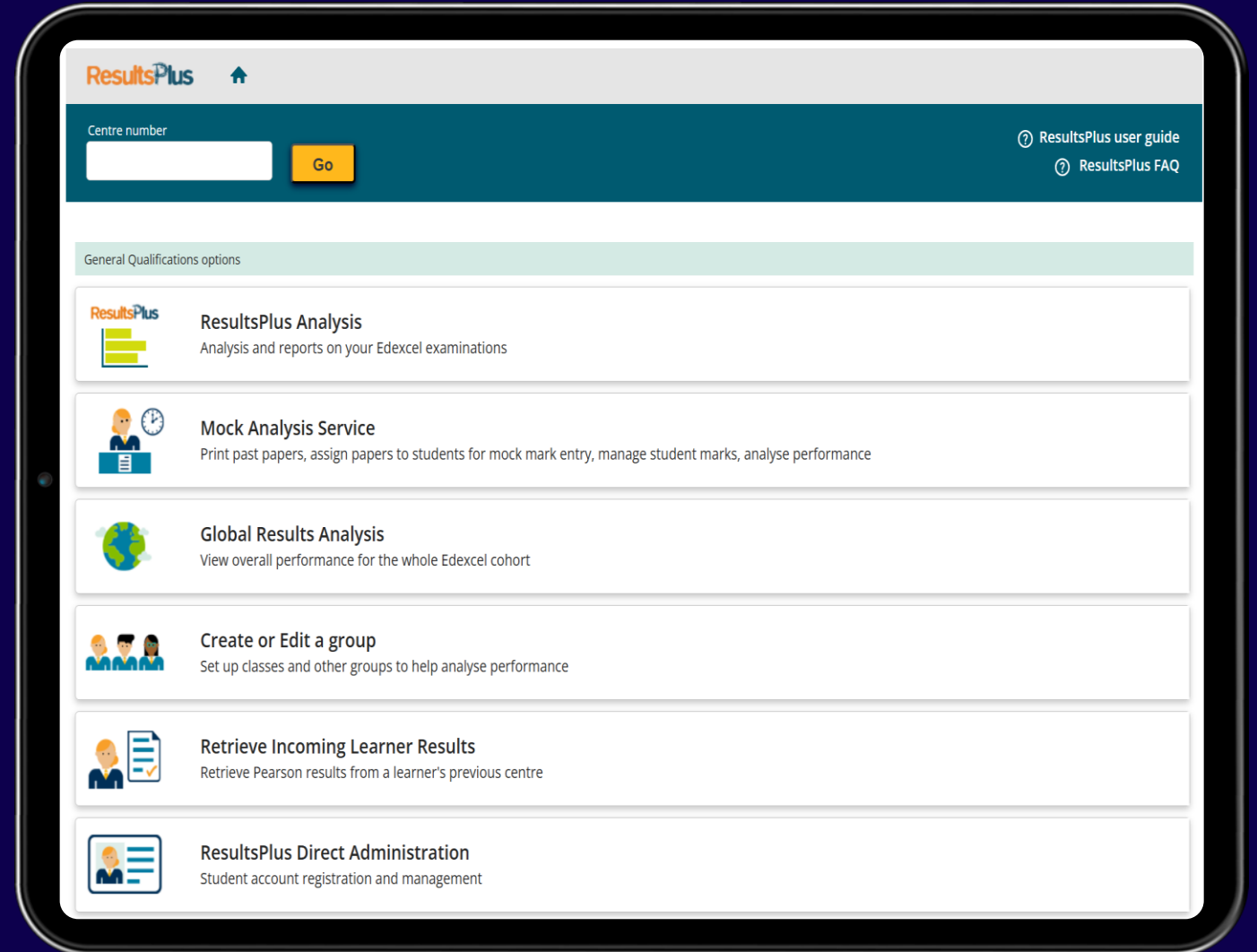
First name	Last name	Paper mark	
FAITH C	LYTHGOE	0/30	View student analysis
LYDIA	HARVEY	12/30	View student analysis
JOANNE B	KITCHIN	16/30	View student analysis
JACOB	BUNN	24/30	View student analysis

You can navigate easily between the overview of students, paper analysis, exam documents, highlight reports and skills maps.

# Support

# Results Plus

- Provides detailed analysis of your learners performance.
- Identify potential topics, skills and types of question where students may need to develop their learning further.
- See actual scores for each exam question for a student, class or group.
- Understand how your students' performance compares with class and Pearson Edexcel national averages.
- Acquire data that may support effective learning and teaching approaches.



# Support for you at every Stage

## Switch to Pearson Edexcel International GCSE Mathematics



**New** Modular International GCSE giving you a choice between linear or modular assessment > [Learn more](#)

### Specification



**DOWNLOAD**

PDF | 1.4 MB

First teaching: **September 2016**

First external assessment: **2018**

Our Pearson Edexcel International GCSE (9-1) Mathematics A specification and support materials have been developed with the help of teachers, higher education representatives and subject expert groups.

The qualification supports progression to further study, with up-to-date content reflecting the latest thinking in the subject. It is comparable to the UK reformed GCSEs in terms of the level of demand and assessment standards.

### Your Maths team

**Nicola and Mark**

Mathematics and Statistics

Email : [teachingmaths@pearson.com](mailto:teachingmaths@pearson.com)

Phone : +44 (0) 344 463 2535  
(Teaching Services team | Mon - Fri, 8am - 5pm GMT)

- > [Visit the customer support portal](#)
- > [Visit your maths community page](#)
- > [Sign up for Maths Emporium newsletter](#)



### Useful documents

- [A guide to International GCSEs \(9-1\)](#) (PDF | 3.5 MB)
- [International GCSE \(9-1\) Mathematics guide](#) (PDF | 1.4 MB)
- [Pearson Edexcel International welcome pack](#) (PDF | 3.1 MB)

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### Course materials

- > [Specification and sample assessments](#) (3)
- > [Exam materials](#) (297)
- > [Teaching and learning materials](#) (52)



### Teaching support and training

- > [New onscreen Mocks Service](#)
- > [Training sessions](#)
- > [Results support](#)



### Published resources

To support effective classroom delivery, we've developed a range of published resources for the new Pearson Edexcel International GCSE (9-1), with progression, relevance and support at their core.

> [Learn more](#)

### News and updates

[See more](#)

Autumn teaching maths update | **12 October 2023**

Getting Ready for Results Day | **18 July 2023**

July teaching maths update | **4 July 2023**

# Resources and Support



# Exam Wizard

- Saves time by creating your own mock paper exams, topic tests, homework or revision activities.
- Uses our Pearson back catalogue of exam questions to practice and develop these skills with your learners'.
- Gain access to past papers and test questions to create tailored learners plans, which target individuals weaknesses.
- Works in conjunction with ResultsPlus to help create exam practice resources for whole cohorts or individual learners.

The screenshot displays the Exam Wizard web application. The top navigation bar includes the 'examWiz' logo, 'Find Past Papers', 'Build a paper', 'My Papers', 'Help', and 'Log out'. The left sidebar contains search filters: 'Search papers', 'Select a qualification' (International GCSE (9-1)), 'Select a specification' (All selected (1)), 'Select a year' (Select one or more), 'Select a series' (Select one or more), and 'Select a unit' (Select one or more). At the bottom of the sidebar are 'Search' and 'Clear' buttons. The main content area shows 'Showing 1 - 20 of 21 results' with pagination controls. Below this is a table of past papers.

Paper name	Code	Tier	Series	Year	Export PDF
Paper 1: Physical geography	4GE1/01		Nov	2021	
Paper 1: Physical geography	4GE1/01		Nov	2020	
Paper 1: Physical geography	4GE1/01		June	2022	
Paper 1: Physical geography	4GE1/01R		June	2022	
Paper 1: Physical geography	4GE1/01		Nov	2023	
Paper 1: Physical geography	4GE1/01		June	2023	
Paper 1: Physical geography	4GE1/01		SAM	SAM	
Paper 1: Physical geography	4GE1/01		June	2024	
Paper 1: Physical geography	4GE1/01		Specimen papers	Specimen papers	
Paper 1: Physical geography	4GE1/01		Nov	2024	

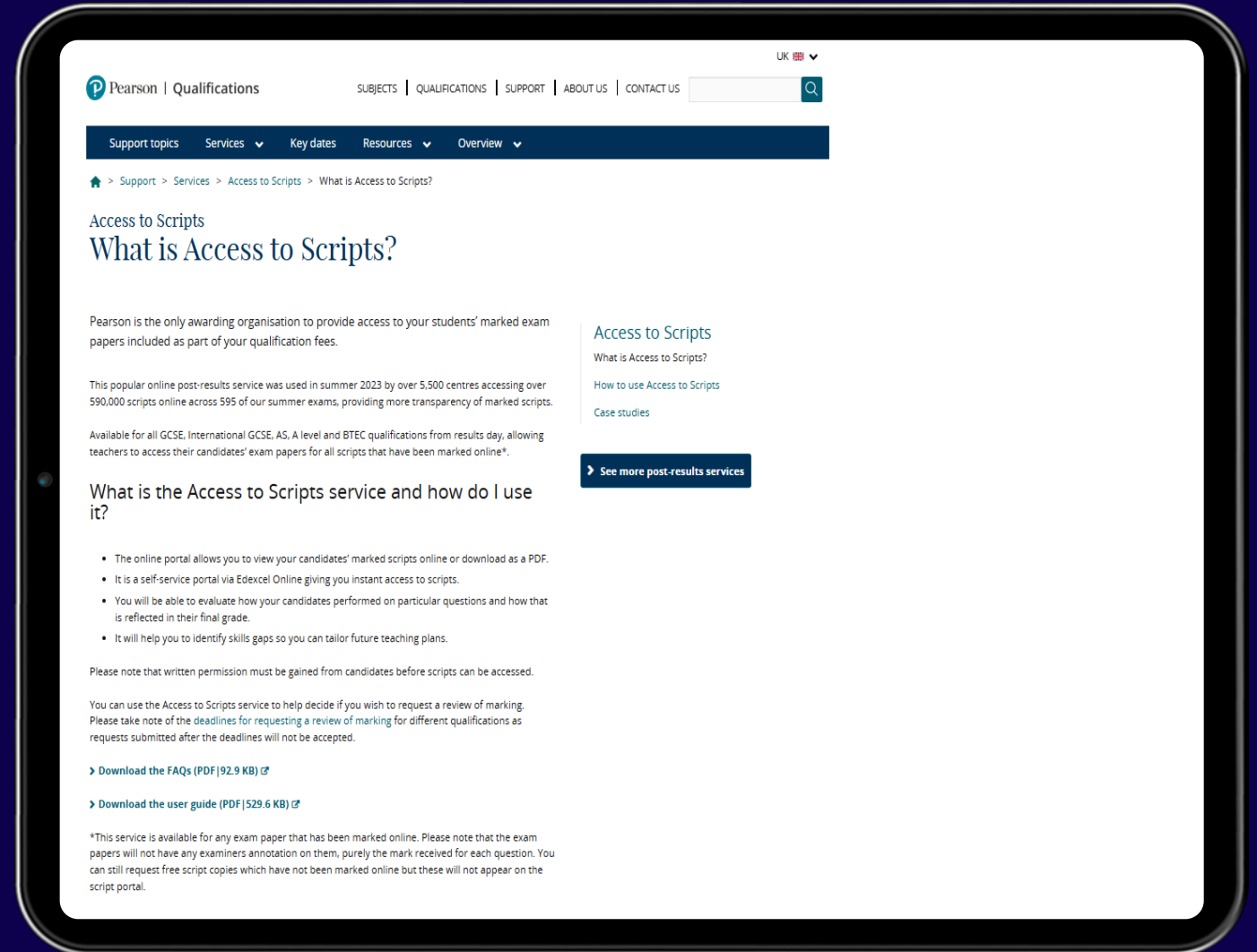


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# Pearson published resources

## Student Book

Edexcel International GCSE (9–1): Mathematics A  
Student Book 1

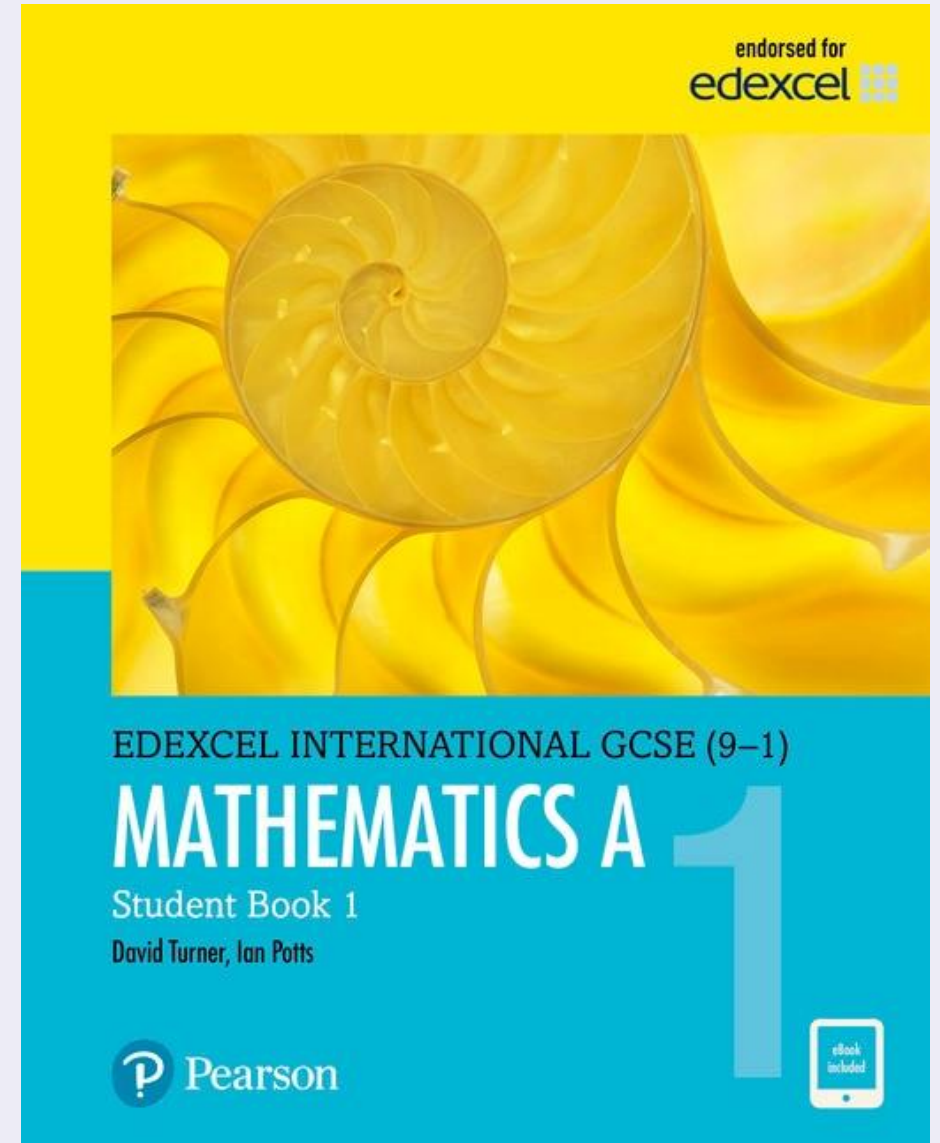
ISBN: 9780435181444

Edexcel International GCSE (9–1): Mathematics A  
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**Copy text**

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**Starter** Previous resource ↑ Teaching mode

**Rounding large numbers in real-life contexts**

The distance between the Earth and Mars varies as they orbit the Sun. Here is some data showing the distance between Earth and Mars on different dates.

Date	Distance between Earth and Mars (km)
	827 978
	124 199
	203 899

**Worksheet 1**

Use this sheet to record and think about your results from the experiment.

**Introduction**

To demonstrate the diffusion of very small molecules into a cell, we can use a cube of agar as a model. The agar cubes contain a substance that changes colour on acid diffusion through them. This models the movement of small molecules such as oxygen into a cell and through its components.

**Results**

1 Record the new lengths (or volumes) of each cube in the table.

2 Record the times (or percentages) for each cube to change colour completely in the table.

Length of cube/cm	Surface area of cube/cm <sup>2</sup>	Volume of cube/cm <sup>3</sup>	Ratio of surface area to volume	Time taken for agar cube to change colour/s
20	6000	8000	0.75	

3 Complete the columns for the surface area. An example has been done for you.

surface area of a cube = 6 × side length<sup>2</sup>

e.g. surface area = 6 × 20<sup>2</sup>  
= 6 × 400 = 2400

**Test strategies**

When answering questions in a test:

**Strategy 1**

1 Always check the **number of marks** for each question.

**Strategy 2**

2 'Give/name/state' questions normally only require the recall of **one** piece of information, such as a definition or an equation.

**Strategy 3**

**Strategy 4**

All resources are available in a range of formats to suit your needs.

# Subject Partner Support



Our subject partners are experts in their fields and are here to support you throughout the year.

**Mark Heslop**

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**Phone:** +44 (0) 344 463 2535 (Mon–Fri, 8.00–17.00)

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# Questions



Thank you