

# PEARSON EDEXCEL INTERNATIONAL GCSE (9-1)

## BIOLOGY

### GETTING READY TO TEACH

Event code: 4BI1/19IF01

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First teaching in 2017, first assessment in 2019.

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# Aims and Objectives

1. Recognise the structure, content and assessment of the qualification
2. Identify possible teaching and delivery strategies for the qualification
3. Recognise the support Pearson offers for the qualification
4. Gain insight into the general differences between the Pearson Edexcel and other specifications
5. Gain an insight into typical student mistakes and misconceptions in the exam

# Timetable for the day

Time	Item
9.30	Welcome Tea & Coffee
10.00	Agenda & Introductions
10.15	International GCSE Features / Introduction to the new Edexcel International GCSE in Biology
11.00	Changes in content and assessment
11.30	Data analysis student responses
12.00	New style questions student responses
13.00	Lunch
13.45	Practical requirements experiment design and student responses
14.30	Mathematical skills and student responses
15.15	Tea
15.30	Lessons from the examinations
16.00	Final questions

# Welcome to Pearson Edexcel

Welcome to Pearson Edexcel,  
the world's leading learning company  
and the UK's largest awarding body.

We set the standard for worldwide  
recognised qualifications, built on the  
UK educational system and accepted  
by universities worldwide.

We have a simple mission:  
**to help make a measurable impact on  
improving people's lives through  
learning.**

*“We judge  
ourselves – and  
invite others to  
judge us – not by  
the products that  
we make but by the  
impact on  
learners.”*

**John Fallon,**  
Chief Executive Officer, Pearson

# Key features of the new International GCSE

- Reviewed and updated in light of UK GCSE changes
- Consultation with teachers and higher education institutions
- Dedicated textbooks are available
- New 9-1 grading scale
- Transferable Skills embedded
- Pearson World Class Qualifications design principles
- Examinations available in January and June
- Dedicated Subject Adviser

**“Grade 9 is not the same as A\*; it’s a new grade, designed to recognise the very highest performing students.”**

*Ofqual*

# The new 9–1 grading scale structure

The new grading scales gives teachers **more information about student's attainment** to help progression to A Level, and universities more information when looking at accepting students into HE.

The new **grade 9 represents a new level of attainment** and we've introduced this to really differentiate top performing students

There's **greater differentiation in the middle of the range of grades**, with three grades (4, 5 and 6) instead of two grades (grades B and C).

Using the same scale for Pearson Edexcel GCSE and International GCSE allows **clear comparison with English standards**, unlike the A\*-G scale.

NEW GRADING STRUCTURE	CURRENT GRADING STRUCTURE
9	A*
8	
7	
6	B
5	
4	
3	D
2	E
1	F
U	G
	U

# Headline changes

- Some revisions to subject content; including change of content split between Double Award and separate sciences
- Removal of equivalent Edexcel Certificate specifications
- Slight changes to paper lengths and number of marks
- No change to assessment style; or to assessment of practical skills
- Introduction of Science (Single Award)
- Grading moves to new 9 – 1 system to match changes in UK reformed GCSE

# International GCSE science qualifications

Our International GCSE Science specifications.

**BIOLOGY**

**CHEMISTRY**

**PHYSICS**

**SCIENCE (DOUBLE AWARD)**

**SCIENCE (SINGLE AWARD) - NEW!!**

In addition, there is also an International GCSE in Human Biology



# Biology qualification content summary

There continue to be five topic areas in the specification:

## Nature and variety of living organisms

- Characteristics of living organisms
- Variety of living organisms

## Structures and functions in living organisms

- Organisation
- Cell structure
- Bio molecules
- Movement in & out of cells
- Nutrition
- Respiration
- Gas exchange
- Transport
- Excretion
- Coordination & response

## Reproduction and inheritance

- Reproduction
- Inheritance

## Ecology and the environment

- Organisms in environment
- Feeding relationships
- Cycles within ecosystems
- Human influences on environment

## Use of biological resources

- Food production
- Selective breeding
- Genetic modification
- Cloning

# Overview of changes in Biology

Some additions:

- Terms eukaryotic and prokaryotic
  - Mitochondria & ribosome function
  - **Stem cells and cell specialisation**
  - Test for protein and lipid
  - **CP investigating pH affect on enzyme activity**
  - Risk factors for coronary heart disease
  - Role of auxin in phototropism
  - **Hormones and the menstrual cycle – LH and FSH**
  - **RNA structure and protein synthesis**
  - **Concept of biodiversity**

Some deletions:

- **Turgidity of plant cells**
- **Water cycle (but subsumed in deforestation)**

# Overview of changes in Biology

Moving from Double Award into Biology:

- **Gas exchange in plants – stomata and leaf structure**
- **Transpiration and CP role of environmental factors**
- **Kidney function**
- **DNA structure**
- **Genetic mutations**
- **Investigating distribution/biodiversity using quadrats**
- **Deforestation**
- **Fish farming**
- **Micropropagation and cloning**

# Overview of changes in Biology

Moving from Biology into Double Award:

- CP investigate evolution of carbon dioxide and heat from respiring seeds
  - Role of phloem
  - Structure and function of the eye
  - Temperature regulation
  - Seed germination
  - Placenta and developing embryo
  - Sewage pollution
  - Fermenters and production of yoghurt
  - Transgenic organisms

# Content Changes

- A mapping document is provided that shows the relationship between the previous specification and the reformed specification.
- A mapping document is provided that shows the relationship between the reformed specification and the CIE IGCSE in Biology.

# Summary of assessment

## FAMILIAR ...

100% external assessment – with no coursework

Linear assessment – all exams take in the same exam session

Mixture of question types – all marked with 'points-based' mark schemes

Single tier of entry (untiered)

Each paper will have some longer questions (4 – 6 marks)

## AND NEW

Maths skills (10% in Bio)

MCQs

More data analysis

# How will balance of Assessment Objectives change?

What are the current AO?

What is the current weighting?

# Assessment objectives

## A01

Knowledge and understanding of biology

**40%**

of total marks

## A02

Application of knowledge and understanding, analysis and evaluation of biology

**40%**

of total marks

## A03

Experimental skills, analysis and evaluation of data and methods in biology

**20%**

of total marks



# How were 2019 papers different from previous ones?

## Activity 1

- Consider how the reformed papers were different from those from the previous specification.
- Write down four observations from your centre or from your students.
- Compare your observations with other delegates on your table.

# Recall to Higher Order Thinking

Pure recall restricted to 15%

16 marks in Paper 1

10 marks in Paper 2

Remember AO1 = 44 marks for Paper 1

44 minus 16 = 28 recall plus

# Consequence

Fewer:

- Name the part labelled A
- What is meant by the term?
- Complete by writing suitable word on dotted lines

# Assessment summary

## Paper 1

Two hours; 110 marks

## Paper 2

One hour and 15 minutes; 70 marks

Both papers will contain a mixture of AO1, AO2 and AO3

The AO3 questions are likely to be in a practical context

# Assessment summary

There will be two examination papers:

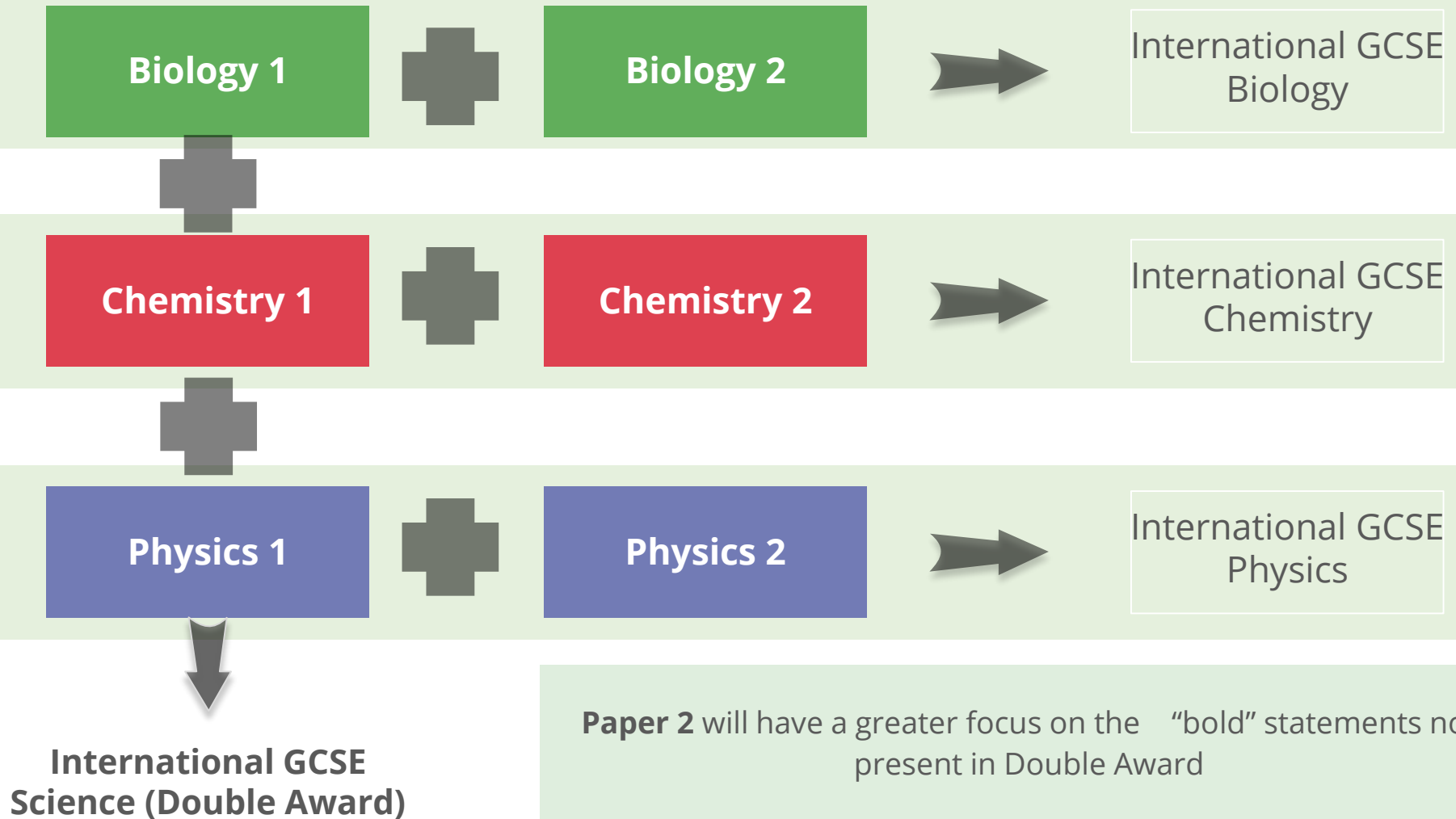
## Paper 1

will **NOT** include the specification statements printed in **BOLD**

## Paper 2

includes **ALL** the specification statements, including those printed in **BOLD**

Both papers have similar question types



# INTERNATIONAL GCSE BIOLOGY

## Double Award (Science) & Single Award (Science)



# Science (Double Award)

- The grouping of topics in a more logical way leads to more changes here than to separate sciences
- Students take Paper 1 in Biology, Chemistry and Physics
- Students achieve two grades, based on performance across all three papers
- The two grades may not be the same
- Students may still progress to A level



# Science (Single Award)

This new qualification has been developed

The model is:

- Half the content of the Double Award specification
- Is a 1 hour 10 minute paper in each science
- This paper will NOT share questions with the Double Award exam
- Students would achieve a single grade, based on performance across all three papers

# Question Styles Retained

- CORMS (Question 10 (c) in Paper 1)
- Graph plotting (Question 8(a) (i) in Paper 1)
- Mini Essays – points based marking  
e.g. Paper 1: 9(b)
- Calculations: see Maths taxonomy - many examples
- **Comprehension (Q1 in Paper 2)**

# CORMS and devising investigations

- **Change** = + and - / range of values;  
• (control) Independent variable
- **Organism** = species / size / age / sex / eq;  
• (biotic) Controlled variable
- **Repeat** = more than one reading / eq;  
• (reliable)
- **Measure** = mass / length / units / time / eq;  
• (precise/accurate) Dependent variable
- **Same** = temp. / LI / water / eq;  
• (abiotic) Controlled variable

# New Question Styles

## ➤ Multiple Choice

Paper 1 – up to 10

Paper 2 – up to 5

NB: Pure recall can only be c.15% so some MCQs will be more demanding

## ➤ Analysis of Data

To address the shift in emphasis from AO1 to AO2

# Multiple choice Examples

See questions in both Paper 1 and Paper 2.

# Data analysis example

Question 8a(ii) paper 1B

(ii) Explain the change in breathing rate during exercise.

(3)

# Marking Data analysis example

## Activity 2

- Look at the samples of Question 8a(ii) paper 1B
- Before looking at the Mark scheme
- Place the responses in rank order
- Compare your order with other delegates on your table
- Now use Mark scheme to mark each response
- Compare this order with your original ranking
- Compare your order with other delegates on your table

# Command words

What are command words and what information do they give?

Where do we find command words?

Two places

In the specification

In the question papers



# Command words

- All our qualifications in International GCSE sciences now use a common taxonomy for command words
- These can be found in an appendix at the back of the specification
- Students can still expect a range of command words across the demand range of the exam paper
- See Paper 1 Question 2 c (ii) Discuss
- See Paper 1 Question 8 b Comment

# Scientific Terms

- See Glossary of practical terms provided

# Marking Discuss items example

## Activity 3

- Look at the samples of Paper 1 Question 2 c (ii) Discuss
- Before looking at the Mark scheme
- Place the responses in rank order
- Compare your order with other delegates on your table
- Now use Mark scheme to mark each response
- Compare this order with your original ranking
- Compare your order with other delegates on your table

# Marking Discuss items example

## Activity 4

- Look at the samples of Paper 1 Question 6 b(ii)
- Before looking at the Mark scheme
- Place the responses in rank order
- Compare your order with other delegates on your table
- Now use Mark scheme to mark each response
- Compare this order with your original ranking
- Compare your order with other delegates on your table

# Example of Scientific Term Questions

Paper 1

Corms question Question 10(c)

'independent and dependent variable 'controlled variables'

# Marking CORMS items example

## Activity 5

- Look at the samples of Paper 1 Question 10 c
- Before looking at the Mark scheme
- Place the responses in rank order
- Compare your order with other delegates on your table
- Now use Mark scheme to mark each response
- Compare this order with your original ranking
- Compare your order with other delegates on your table

# CORMS items unfamiliar context

## Activity 6

- Look at 1BR Paper 1 Question 11

**11** The diagram shows an insect called a wasp.

Wasps kill their prey by injecting a poison called venom through a small tube called a stinger.

Some scientists believe that the smell of venom attracts other wasps.

Design an investigation to find out if the smell of venom attracts other wasps.

Include experimental details in your answer and write in full sentences.



(6)

- How is this different to 1B question 10 c?
- What additional skills do students need to answer this item?

# **INTERNATIONAL GCSE BIOLOGY**

## **Practical and mathematical skills**



# Practicals in the specification

- Specifications contain a number of practicals
- Further suggestions for practicals appear in an Appendix
- The practicals would form a basis for practical work, on which schools would be encouraged to build
- Questions on exam papers test practical skills, rather than recall of specific techniques – so may be in the context of any practical activity

# Developing practical skills

Students should be familiar with a range of laboratory apparatus and its use, including the reading of scales.

**1**

Students should be able to plan an experiment and control variables, to collect and record data in a table, and to plot appropriate graphs.

**2**

Students should be able to process and analyse data, to identify and account for anomalies, to evaluate data and methods, and to justify a conclusion.

**3**

The specification will include guidance on the use of terminology within practical and experimental work.

**4**

# Practical skills in examinations

**Students may be tested on their ability to:**

Describe and plan experiments

Draw conclusions which are consistent with the evidence, using scientific knowledge and understanding

Describe safe and appropriate practical techniques

Communicate findings from experimental activities using appropriate vocabulary, calculations and graphs

Analyse and interpret data from experimental activities

Evaluate data and methods

# Practical skills in examinations

## Activity 7

- Look at the samples of Paper 1 Question 4a
- Before looking at the Mark scheme
- Place the responses in rank order
- Compare your order with other delegates on your table
- Now use Mark scheme to mark each response
- Compare this order with your original ranking
- Compare your order with other delegates on your table

# Practical skills in examinations

## Activity 8

- Look at the samples of Paper 1 Question 4b
- Before looking at the Mark scheme
- Place the responses in rank order
- Compare your order with other delegates on your table
- Now use Mark scheme to mark each response
- Compare this order with your original ranking
- Compare your order with other delegates on your table

# Mathematical skills

- The development and use of relevant mathematical skills is key to progress in science subjects
- A list of mathematical skills which should be developed appears in the Appendix for each specification
- These skills will be tested in exam papers within the context of the science
- Assessment of mathematical skills will account for 10% of marks in Biology, 20% in Chemistry and 30% in Physics

# Mathematical skills

- What opportunities exist within the specification to develop mathematical skills?
- What classroom activities do you use to help students improve these skills?
- Compare your thoughts to other delegates

# Mathematical skills in examinations

## Activity 9

- Look at the samples of Paper 1 Question 5 b (iii)
- Which maths skills is this item testing?
- Use Mark scheme to mark each response
- Compare your order with other delegates on your table



# Mathematical skills in examinations

## Activity 10

- Look at the samples of Paper 1 Question 5 c (i)
- Which maths skills is this item testing?
- Use Mark scheme to mark each response
- Compare your order with other delegates on your table

# Mathematical skills in examinations

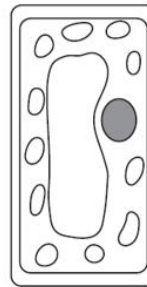
## Activity 11

- Look at the samples of Paper 1 Question 6b (i)
- Which maths skills is this item testing?
- Use Mark scheme to mark each response
- Compare your order with other delegates on your table

# Mathematical skills in examinations

- 1 Plant cells contain organelles.

The diagram shows a plant cell containing some organelles.



- (b) The magnification of the cell is calculated using this formula.

$$\text{magnification} = \frac{\text{width of cell in diagram}}{\text{actual width of cell}}$$

The actual width of the cell is 40  $\mu\text{m}$ .

The magnification of the plant cell is

(1)

- ☒ A  $\times 0.06$
- ☒ B  $\times 0.6$
- ☒ C  $\times 6$
- ☒ D  $\times 600$

# Lessons from first reformed series.

- The new qualification was examined for the first time in this June series. The examiners were impressed with the standard of student responses.
- Centres have prepared students well for the new style of questions and the new areas of specification content.
- There was little evidence of students running out of time on the paper and most students attempted all questions.

# Lessons from first reformed series.

Based on their performance on this series of papers, students are offered the following advice:

- ensure that you read the question carefully and include sufficient points to gain full credit
- in discuss items include points for and against and make sure that you include as many points as there are marks available
- in evaluate items include points for and against and make sure that you include as many points as there are marks available reach a conclusion that reflects the points you have made
- make sure you have practiced calculations and understand and know how to apply any formulae
- write in detail and use correct and precise biological terminology

# Lessons from first reformed series.

- make sure you have expressed your answer in the correct units and ensure you know the relationship between linear, squared and cubed units such as  $\text{mm}^3$  and  $\text{dm}^3$
- remember to use the knowledge and skills acquired during practical work to help in questions about unfamiliar or novel practical procedures
- questions require students to make links between different parts of the specification, so when considering a question remember to use all the knowledge and understanding you have gained throughout the specification
- in experimental design questions always be able to name the independent variable and give the range of values, the dependent variable, and how you are going to measure it and the control variables and explain how these will be controlled
- always read through your responses and ensure that what you have written makes sense and answers the question fully

# Teaching and learning support overview

Getting Started Guide  
& Scheme of Work

Getting Ready to  
Teach Events

Subject interpretation  
of transferable skills

Subject Advisor

Results Plus &  
ExamWizard

Regional Support  
Manager

Curriculum Matched  
Publishing

Topic Guides

Additional SAMs

Exemplar marked  
responses with  
commentaries

Access to Scripts

# Published resources

We are committed to helping teachers deliver our Pearson Edexcel qualifications and helping students to achieve their full potential.

To do this, we aim for our qualifications to be supported by a wide range of high-quality resources, produced by a range of publishers.

However, it is not necessary to purchase endorsed resources to deliver our qualifications.



# Pearson published resources

- Each book provides free access to an ActiveBook, a digital version of the Student Book, which can be accessed online, anytime, anywhere supporting learning beyond the classroom
- Chapters are mapped closely to the specification to provide comprehensive coverage
- Learning is embedded with exercises, source materials and exam practice throughout
- Transferable skills, needed for progression into higher education and employment, are signposted allowing students to understand, and engage with, the skills they're gaining
- A fully integrated Progression Map tool allows quick and easy formative assessment of student progress, linked to guidance on how to personalise learning solutions.
- Reviewed by a language specialist to ensure the book is written in a clear and accessible style for students whose first language may not be English





**ResultsPlus is the free online results analysis tool for teachers - it provides analysis features that other similar solutions don't**

- Provides a detailed breakdown of student performance in Edexcel exams.
- Helps identify topics where the student can benefit from further learning and allows this knowledge to inform teaching strategies and approaches.
- Provides a comparison of student performance at regional level.
- Allows you to view your school's performance against other Pearson Edexcel schools in your country. You can also find student results analysis from their previous Pearson Edexcel school.
- Mock exams results can also be fed into the system to produce an analysis.
- [ResultsPlus Direct](#) gives your students access to their final grades and performance breakdown, wherever they are.
- Sign up for free ResultsPlus account in just a few quick and easy steps [here](#).
- Access additional video guides here:
  - [ResultPlus - Individual Student Analysis](#)
  - [ResultsPlus - Cohort Analysis](#)
  - [ResultsPlus - Mock Analysis](#)
  - [ResultsPlus - Global Analysis](#)



**examWizard is a free tool for teachers containing a bank of past paper questions to help create their own bespoke mock exams and tests to focus on particular topic areas as needed:**

- Use existing mark schemes for accurate marking
- Use existing examiner report for insight
- Use the results to understand where students need more support, informing teaching strategies.

**Unlike other similar question banks, ExamWizard is:**

- Available free to all Edexcel centres
- Updated with latest questions faster, following the exam series
- One stop shop for assessment material with access to whole past papers and examiner reports as well as the ability to construct bespoke ones easily with content tagged to specific attributes.

# New Access to Script (ATS) Online Portal

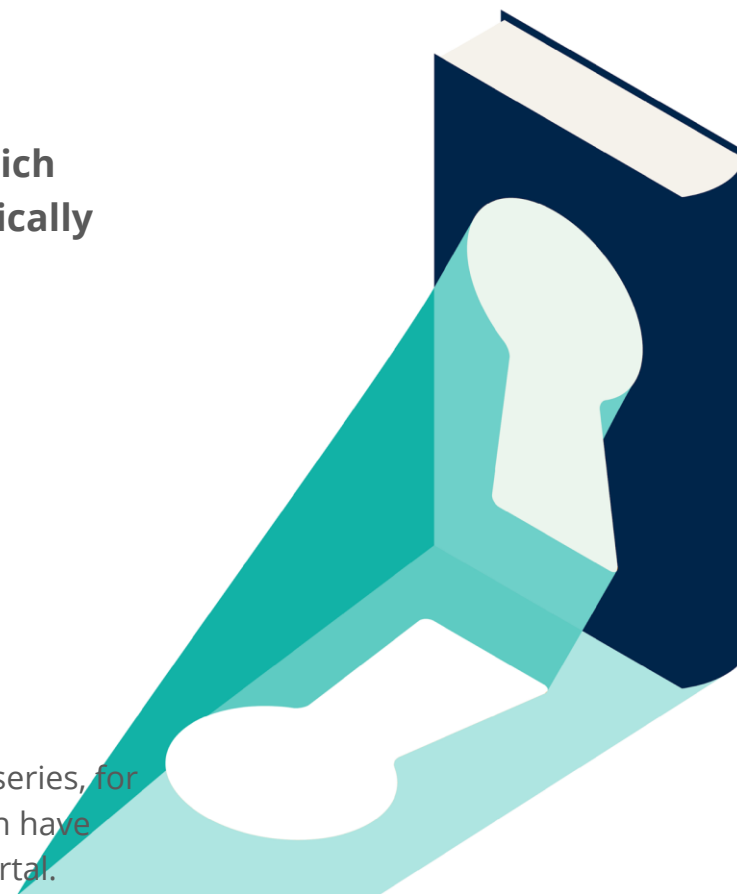
**Access to Scripts (ATS) is a free online portal which allows teachers to immediately access electronically marked exam papers**

Provides enhanced transparency and

- Offers transparent approach to marking process
- Provides better understanding of marking before requests for enquiries about results are made
- Provides excellent aid for teaching and preparing other cohorts for examinations by helping you to evaluate a student's performance on particular questions in relation to what they have been taught.

Available instantly from results day for all our examination series, for a defined window, you can view and download scripts which have been marked online free of charge from our Self-Service Portal.

**For more information on ATS, and the post results windows, visit our [post-results pages here](#).**



# Pearson International Schools Community

**Connect with international teachers around the world**

- Connect with other teachers working in international schools and join groups who have shared interests, subjects or location
- Read topical news and articles and share yours
- Advertise jobs at your school or find job opportunities
- Download free resources
- Sign up for events.

**Sign up today at:**  
**[community.pearsoninternationalschools.com](https://community.pearsoninternationalschools.com)**



# Other useful links

## **1. Grade Boundaries**

This page shows the minimum marks needed to achieve a certain grade for all UK and international examinations. Also refer to the examiners report which is available for download with other documents.

## **2. Examination Results Statistics**

Results statistics summarise the overall grade outcomes of candidates sitting Pearson Edexcel examinations.

# Thank you

Find out more about us at:  
**<http://qualifications.pearson.com>**