

Pearson Edexcel

International GCSE in Human Biology (4HB1)

Module 2

First teaching in June 2017

First assessment June 2019



Session Agenda

- 08:00 Welcome & Introductions
- 08.20 Assessment objectives
- 08:50 Question types
- 09:20 Understanding and using mark schemes
- 09.40 Resources and support
- 09.50 Final questions
- 10.00 Close

Aims and Objectives

- Understand the assessment objectives for the qualification
- Understand the question types for the qualification
- Understand the mark schemes for the qualification
- Practice using the mark schemes using exemplar student material
- Learn about the support provided by Pearson around assessment and exemplars

Pearson Edexcel

About Pearson Edexcel

Pearson is the world's leading learning company. Our mission is to help people make progress in their lives through learning – because we believe that learning opens up opportunities, creating fulfilling careers and better lives.

- ❖ **Qualifications:** our qualifications and assessments help to educate millions of people worldwide.
- ❖ **Support:** we provide innovative textbooks, curriculum materials, multimedia learning tools, IT platforms, professional development.
- ❖ **Impact:** At the core of everything we do is the desire to make a measurable impact on improving people's lives through learning.

Edexcel is part of Pearson Education and is the UK's largest awarding body.

- ❖ **Worldwide recognition:** over 150 years of international education experience, more than 3.4 million learners in 70+ countries. Over 9 million scripts marked annually, with exceptionally reliable results.

International GCSE Features



9-1 grading scale

| | NEW GRADING STRUCTURE | CURRENT GRADING STRUCTURE |
|---|-----------------------|---------------------------|
| <p>The new grade 9 represents a new level of attainment and has been introduced to differentiate your top performing students.</p> <p>The bottom of the grade 7 broadly aligns with the bottom of the grade A.</p> | 9 | A* |
| | 8 | |
| | 7 | A |
| <p>There's greater differentiation in the middle of the scale, with three new grades 6, 5 and 4 rather than two grades (B and C).</p> <p>The bottom of the grade 4 broadly aligns with the bottom of the grade C.</p> | 6 | B |
| | 5 | |
| | 4 | C |
| | 3 | D |
| <p>The bottom of the grade 1 broadly aligns with the bottom of the grade G.</p> | 2 | E |
| | 1 | F |
| | 1 | G |
| | U | U |

9-1 grading scale

Awarding

- The grading system has changed but our commitment to awarding grades that accurately reflect learner exam performance remains the same.
- We set new grade boundaries (minimum number of marks needed to achieve each grade) for each assessment of each qualification.

Benefits

- Greater differentiation across levels of attainment, e.g. 2 grades where the current C grade is.
- Rewards truly outstanding achievement with the grade 9.
- Provides more information about student attainment to help progression to A Level.
- Same scale for Pearson Edexcel GCSE and International GCSE allows for clear comparison with English standards, unlike old A* to G grading.

World-class qualifications

All Edexcel qualifications are developed to meet Pearson's World Class Qualification design principles



Endorsement of educational **thought-leaders and assessment experts** from across the globe

Developed using an understanding and benchmarking of **all educational systems**

Qualifications that support young people to **develop the capabilities** they need to **progress** and prosper in their lives

Supporting Transferable skills

- Our transferable skills framework underpins the design all Pearson Edexcel international qualifications and their supporting resources across IPLS, International GCSE and International A Level.
- Ensures our assessments target the skills students' need for successful progression.
- Increasing our support where these skills **naturally** occur through the teaching, learning and assessment.
- Pearson materials and mapping will support you in identifying and developing the acquisition of these skills in students across the full curriculum.
- <https://qualifications.pearson.com/content/dam/pdf/International%20GCSE/General/Transferable-Skills-Information-Pack.pdf>



Activity 1
**POLLS to get to
know you**

- Read through the questions on the screen
- The questions can also be found in the delegates booklet
- Please type your answers into the chat panel

Assessment objectives (AOs)

A01

Knowledge and understanding of Human Biology

40%
(36 marks)
of total marks

A02

Application of knowledge and understanding, analysis and evaluation of Human Biology

40%
(36 marks)
of total marks

A03

Experimental skills, analysis and evaluation of data and methods in Human Biology

20%
(18 marks)
of total marks

AO1

Knowledge and
understanding of
Human Biology

40%
(36 marks)
of total marks

To meet this AO students will be expected to:

- *recall scientific facts (maximum of 14 marks) and demonstrate understanding of scientific techniques and procedures*
- Students will not be expected to design, improve or evaluate practical methods
- Recall questions tend to carry few marks and include a limited range of command words.

Activity 2 – AO1 and Command Words

- Read through the list of command words in the delegates booklet
- Identify four command words that might be used in questions testing scientific recall
- Please type your response into the chat panel

Examples of common command words used to test recall

- State
- Name
- Give
- What
- Why

However this does not mean that testing scientific recall will exclude command words such as describe.

It depends on how the question is structured and its context.

Activity 3 – Recall questions

- Take a look at the questions found in the delegates booklet
- Please type the number(s) of the questions that are recall into the chat panel

1. Lipids are large molecules that are found in cells.

(a) Name the two components of a lipid.



(2)

2. Describe a test to show if there is lipid present in a piece of food.



(4)

3. State one precaution that reduces the safety risk of working with bacteria.



(1)

4. The two strands of the DNA molecule are held together by base pairs.

(a) How are the bases paired in DNA?

(1)

☐ **A** A-A and T-T

☐ **B** C-C and G-G

☐ **C** A-T and C-G

☐ **D** C-T and A-G



A02

Application of
knowledge and
understanding,
analysis and
evaluation of
Human Biology

40%
(36 marks)
of total marks

To meet this AO students will be expected to:

- *apply knowledge and understanding of scientific ideas*

It also builds on expectations given in AO1 by expecting students to

- *apply their knowledge and understanding of scientific enquiry, techniques and procedures*

Activity 4 – Application questions

- Take a look at the questions found in the delegates pack.
- Please type the number(s) of the questions that expect students to apply knowledge and understanding.

Activity 4 - answers

1. Passage on DNA
2. Function of tendons and ligaments
3. MRSA and the immune system
4. Drug statements
5. Labelling a diagram
6. Calculating breathing rate



A03

Experimental skills,
analysis and
evaluation of data
and methods in
Human Biology

20%
(18 marks)
of total marks

To meet the criteria for AO3 students are expected to:

- *Interpret and evaluate*
- *Make judgements and draw conclusions*
- *Develop and improve experimental procedures*

Examples of AO3 questions

Describe an experiment to show that bile salts are effective in emulsifying lipids.

(5)

- Specification point 6.8 expects students to understand the role of bile in emulsifying fats
- There is no compulsory or suggested practical in the specification that are linked to the context of this question but from the skills gained from practical activities they are expected to *develop and experimental procedure*. This forms part of the AO3 criteria

Use information from the bar chart and your own knowledge to discuss the advantages and disadvantages of birth control pills and sterilisation in preventing pregnancy.

(4)

- In this question students are making judgements from given data to draw conclusions. .
- This meets the criteria for AO3 and covers specification point 11.11

Question Types

The four question categories

Questions can be placed into one of four main categories depending on their structure

- Multiple choice (MCQ)
- Short objective
- Open response
- Calculation

Multiple choice questions

- Most questions of this style are awarded one mark
- MCQ's can be found throughout the paper and range in their level of difficulty depending on the context, content and grade that the question is aimed at
- The most common style for MCQ is where candidates choose a correct answer out of four that are given
- MCQ's can contain content that might cover AO1, AO2 or AO3
- Most MCQ's are computer marked
- The number of MCQ's in an examination paper is limited to a total of 8 marks

Activity 5 - MCQ questions

(a) The menstrual cycle of a female is 28 days.

On which day of the cycle is the ovum (egg) likely to be released?

- ☐ **A** 1
- ☐ **B** 14
- ☐ **C** 20
- ☐ **D** 28

Please type your response to each question into the chat panel

- *Which assessment objective is covered by this question?*
- *What problems might you anticipate when students answer this type of question?*

Example: MCQ questions

Animal cells are made up of components that each carry out a particular function in the cell

Draw one straight line from the cell part to its function in the cell

(3)

cell part

cell membrane

nucleus

ribosome

function in the cell

makes proteins

releases energy

allows entry and exit of materials

protects the cell from pathogens

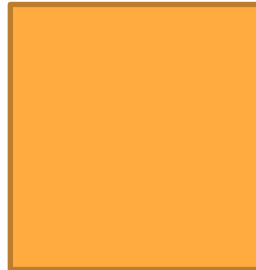
holds genetic information

Activity 6 – Multiple choice

- Take a look at this activity in your delegates pack.

Is the question shown an example of a multiple choice question?

- Please type yes or no into the chat box



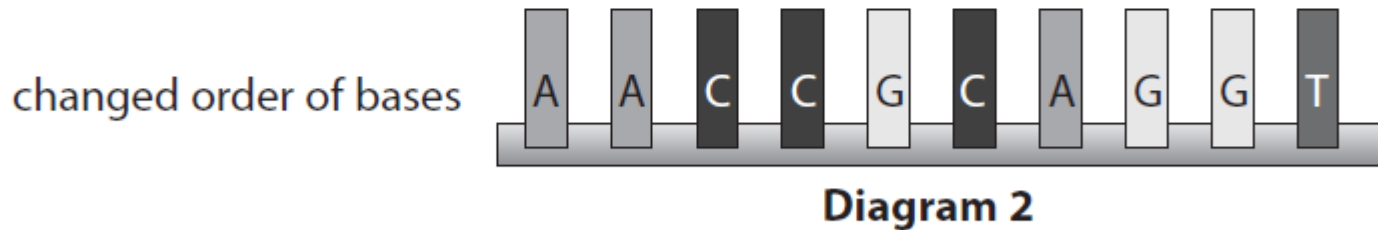
Short objective questions

- These questions involve a written response that carries less than four marks
- The style and structure of the question can vary significantly. Some examples are:
 - Gap fill to complete sentences or paragraphs
 - Shorter written answers that could be, for example, a description, explanation or a conclusion
 - Completing tables

Activity 7: short objective questions

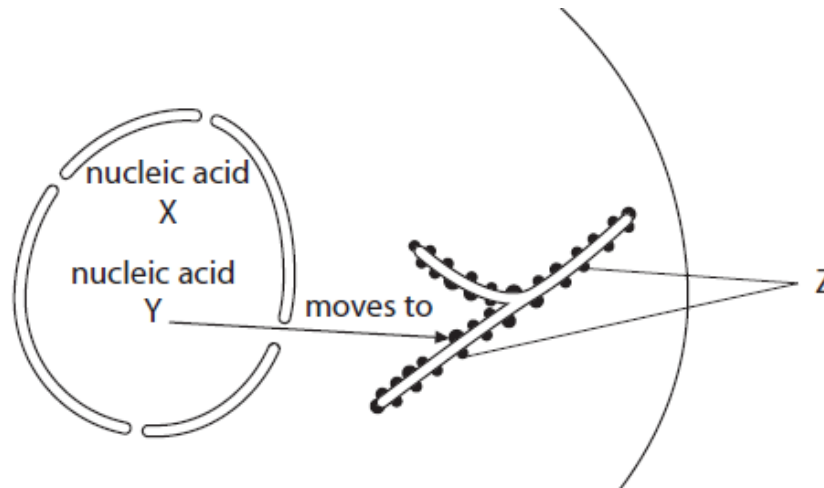
(c) Diagram 1 shows the normal order of bases along one strand of a DNA molecule.

Diagram 2 shows the same DNA strand but with a change in the order of bases.



(i) Use the diagrams to describe the change in the order of bases on the DNA strand. (2)

Example: short objective question



(iv) State three structural differences between nucleic acid X and nucleic acid Y.

(3)

1

.....

2

.....

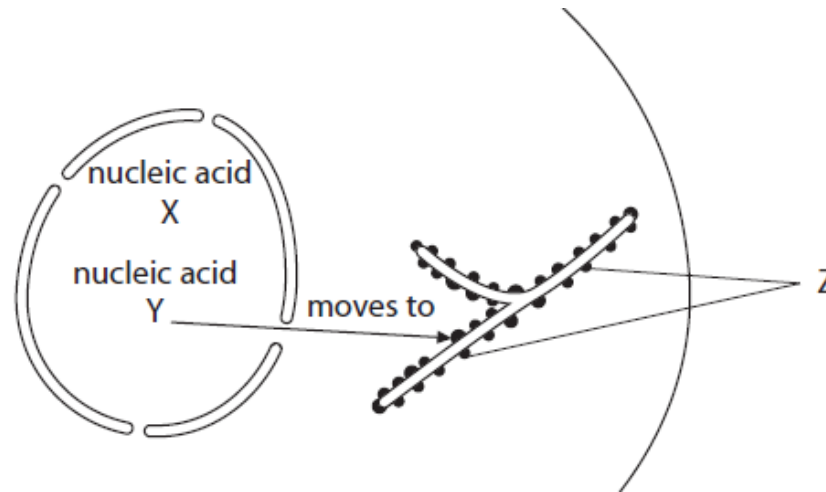
3

.....

Open responses

- Open response questions can gain four or more marks
- These types of questions are sometimes known as extended answers
- More lengthy written responses are expected from students
- There is limited variation on the structure of open response questions as students should be able to demonstrate scientific literacy in prose

Example 1: Open response



(b) Describe the functions of the nucleic acids X and Y and the structures labelled Z.

(4)

Example 2: open response

A prolactinoma is a non-cancerous tumour of the pituitary gland.

A prolactinoma can interfere with the normal production of hormones by the pituitary gland.

Explain why one symptom of this tumour in females can be reduced fertility.

(6)

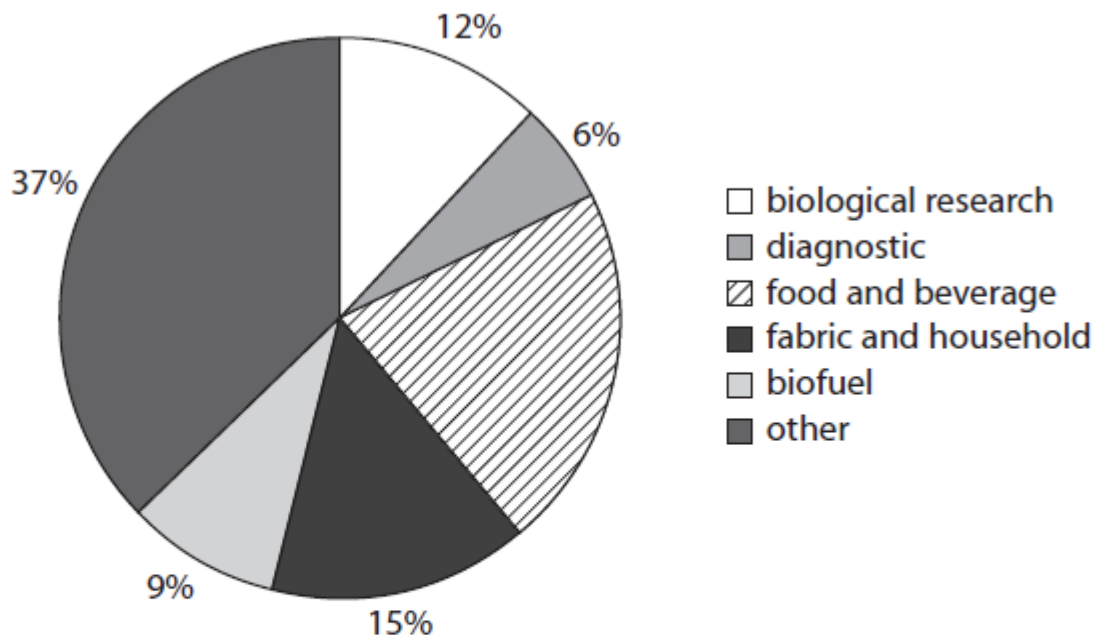
- Aimed at students working at higher grades
- Scientific terminology is expected here with knowledge of hormones and the menstrual cycle
- Students would be expected to name hormones and understand their effects on the body including the steps involved in negative feedback responses

Maths skills

- Calculations are compulsory in all UK qualifications including the International GCSEs
- A minimum of 10% of the total marks will be calculations
- Straightforward addition, subtraction and division are not given marks if used on their own in calculations
- The skills tested range from straightforward to calculations to multi-stage calculations worth up to three marks

Example 1: Maths skills

The pie chart shows the worldwide industrial uses of immobilised enzymes.



- (i) The total estimated market value of industries that use immobilised enzymes is £3.9 billion (£3 900 000 000).

Calculate the estimated value of immobilised enzymes in the food and beverage industry.

(2)

Example 2: Maths skills

Calculate the percentage change in the number of reported cases of MRSA between 2003 and 2011 (lines 12 and 13).

(3)

- This is a multi-stage calculation involving a percentage
- As this calculation involves additional steps it is allocated more marks
- This question involves the use of subtraction and division which are credited in this case as they are being used as part of a calculation

Example 3: Maths skills

The diameter of the lumen in blood vessel 1 is 10 mm. The diagram has been drawn 50 times larger than the actual size of the blood vessel.

Calculate the actual size of the lumen of this blood vessel.
Give your answer in micrometres (μm).

(2)

Example 4: Maths skills

- (i) Use data from the graph to calculate the rate of breathing at rest.

Give your answer in breaths per minute.

(2)

rate of breathing = breaths per minute

- (ii) The mean tidal volume (depth) of breathing at rest is 0.3 dm^3 .

Calculate the mean tidal volume of breathing between 35 and 45 seconds.

(3)

Activity 8 – Maths skills

- Look back at the example calculations given. These are given in your delegate pack
- Decide which maths skill each covers
- Please type your responses into the chat panel adding the example number for each

Answers to Activity 8

Example 1

1C (use percentages) and 2B (change the subject of an equation)

Example 2

1C (use percentages)

Example 3

2I (order of magnitude)

Example 4i

4A (Translate between graphical and numerical form)

Example 4ii

2B (finding an arithmetic mean)

Understanding and using the mark scheme

Design of the mark scheme

- The mark scheme contains general guidance followed by answers to the questions given in the question paper
- The general marking guidance is aimed to support examiners during the marking periods following examinations
- It is also useful for centres that use past papers in assessments such as mock exams

The mark scheme template

| Question number | Answer | Notes | Marks |
|-----------------|--------|-------|-------|
| | | | |



All question numbers and sub-question letters are given here



- If more than one mark is allocated to a question they will be bullet-pointed in the answer column
- Alternative answers to the same marking point are separated by a forward oblique (/)



The notes column details any other acceptable or non-acceptable answers to a marking point

Example mark scheme

| Question number | Answer | Notes | Marks |
|-----------------|---|-------|-------------|
| 4 (a) | (i) B = ureter; C = vas deferens/sperm duct; D = testis; | | 1 1 1 |
| | (ii) <ul style="list-style-type: none"> • produces fluid; • enables sperms to swim; • contains nutrients/sperm activators/provides correct pH; | | 3 |
| | (iii) <ul style="list-style-type: none"> • difficulty in passing urine; • because swelling closes urethra/exit from bladder; | | 2 |

Activity 9: Using the mark scheme

- Use the mark schemes in your delegate pack to allocate a mark to each response given
- Please type your mark allocation into the chat panel in the same order that each response is shown

Response A

~~find out if people~~ look at other
factors of peoples life styles with
COPD

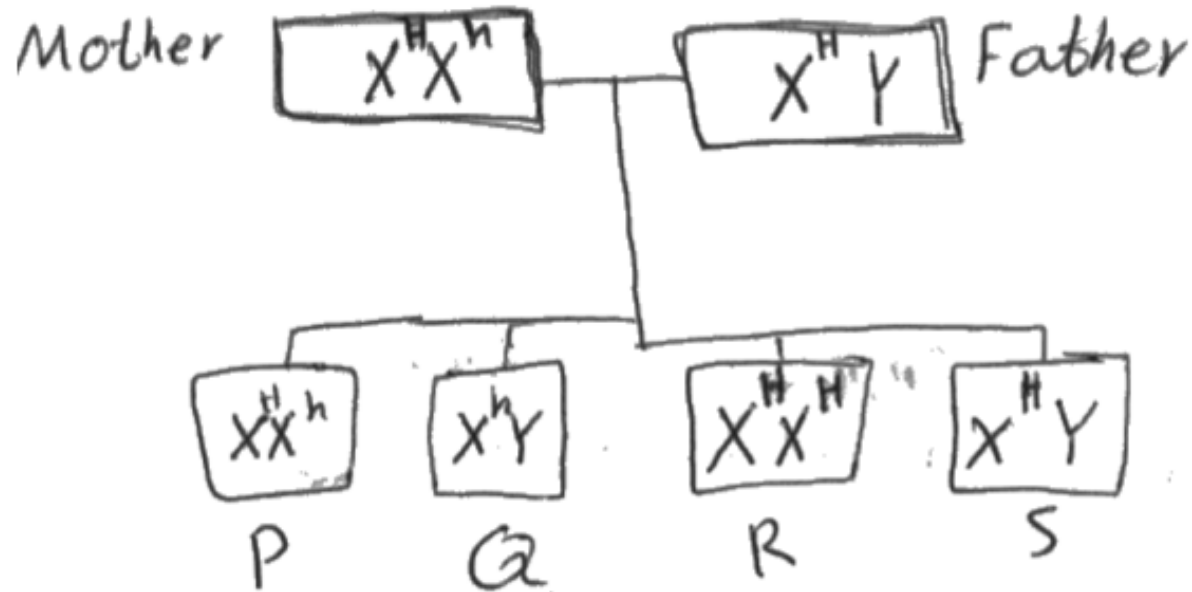
- 1 mark out of a possible 2
- A very brief answer that gives no specific details about lifestyle

Response B

The amount of pollution in the air in the area that person lives in, any history of genetically caused lung diseases in that person's family. Also the amount of exercise that person does, and other aspects of lifestyle and working environment.

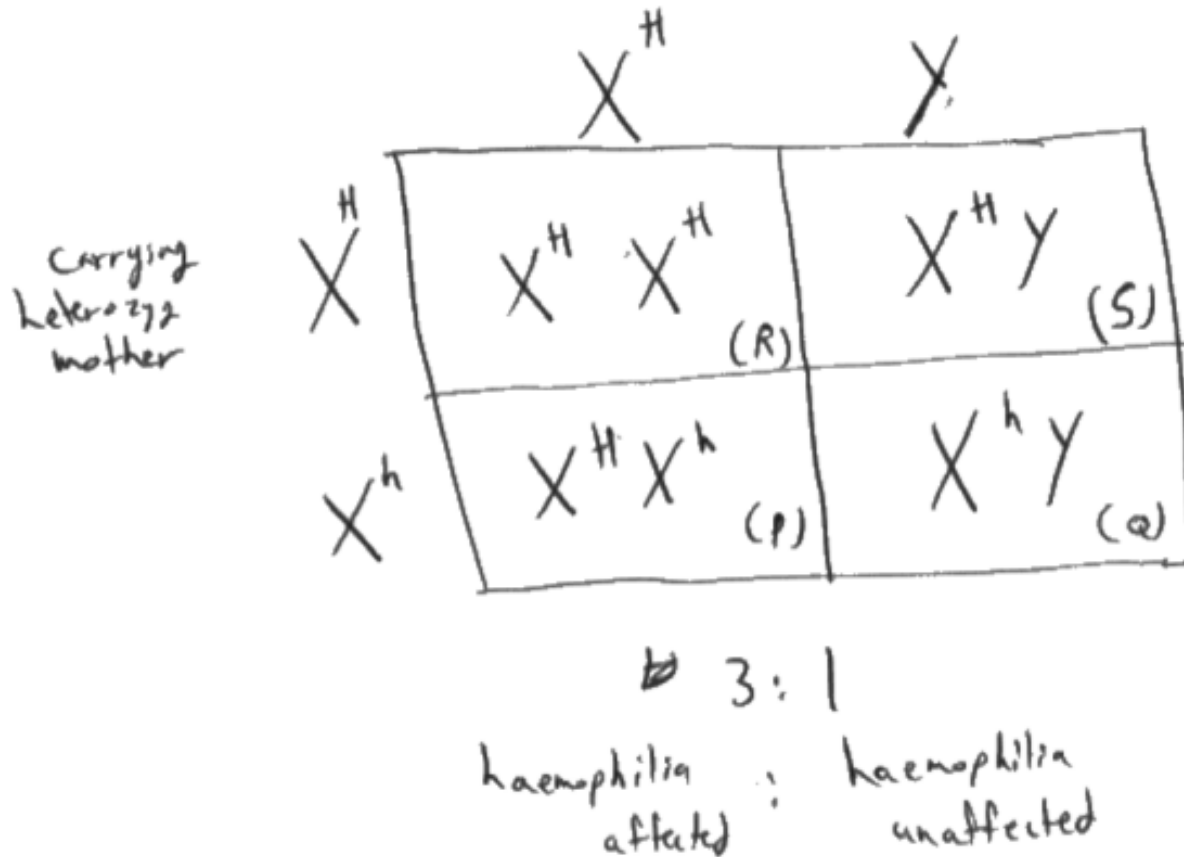
- 2 marks out of 2
- Reference to atmospheric pollution and a possible genetic cause

Response C



- 1 mark out of a possible 2
- Parent genotypes identified
- No gametes or linkage given to produce a correct outcome is shown

Response D



- 1 mark out of a possible 2
- Punnett square is acceptable for a genetic diagram
- Parent genotypes omitted but gametes and correct linkage to correct outcome given

Response E

An organism that causes disease in the
organism infects.

- 0 marks out of a possible 1
- This response has stated organism rather than microorganism

Response F

A microorganism that causes
disease

- 1 mark out of 1
- Succinct details given that meet the requirements of the marking point

Subject Features

No coursework. 100% external assessment

Embedded practicals

Mathematical content updated in line with 9-1 requirements

Relevant, up-to-date, engaging content

Transferable Skills embedded

Written examinations accessible to students of all abilities

Dedicated textbooks and support material

[Teachingscience@pearson.com](https://www.teachingscience@pearson.com)



Resources and support

Resources

We offer a range of free and paid for resources for **International GCSE in Human Biology**. They have been designed to support teachers to improve learner outcomes.



Support Overview for International GCSE in Human Biology

Getting Started Guide &
Scheme of Work

Getting ready to Teach
Events

Subject interpretation of
transferable skills

Subject Advisor

Results Plus

Regional Support Manager

Curriculum Matched
Publishing

Exemplar Marked
Responses

Additional SAMs

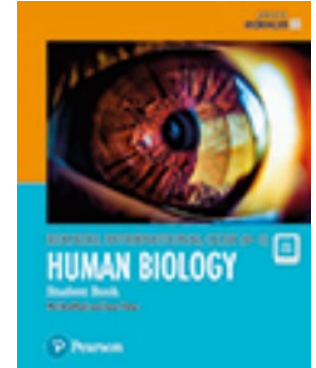
Exam Wizard

Lesson plans

Topic booklets

Pearson Publishing

- Pearson Edexcel International GCSE (9–1) Human Biology Student Book and ActiveBook
- Pearson Edexcel International GCSE (9–1) Human Biology Online Teacher Resource Pack



- 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>

- A free tool for teachers which helps you make quick homework assignments, topic tests and mock exams.
- Questions tagged against unit, topic and assessment objective or simply choose a whole past paper.
- Use existing mark schemes for accurate marking.
- Use examiner report for insight.
- Most recent exam content available sooner.
- Use the results to understand where students need more support, informing teaching strategies.

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.

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We also have an online [community](#) especially for Science teachers.

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.

3. [Progress to University](#)

Here you can find information and guidance about how to progress to universities worldwide with Pearson Edexcel qualifications.

4. [Access to scripts](#)

Make an informed enquiry about results (EARs) using our free access to scripts portal.

Any questions?

**Please fill in
your evaluation forms**

We value your feedback!



ALWAYS LEARNING