



WICKERSLEY
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Science Y11 Information Evening



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“STRIVING TO GIVE OUR STUDENTS THE BEST POSSIBLE LEARNING OPPORTUNITIES”



Why do students study science?

THE SCIENCE WAY



WE MAKE LINKS BETWEEN BIG IDEAS IN SCIENCE

We can make observations
describe what we see

**We work safely &
look out for hazards**

We can learn from successes & failures
and adapt to do things better

WE EVALUATE EXPERIMENTAL RESULTS IN LIGHT OF THE ORIGINAL PROBLEM

**We use scientific
vocabulary
accurately &
talk like a
scientist**

We can use numbers and data to support
our work and obtain meaningful
information

We can identify key issues in
a problem and use our
scientific knowledge to tackle them

WE ALWAYS ASK QUESTIONS AND TRY TO FIGURE OUT WHY

Studying GCSE Science is essential for:

- Career opportunities
- Higher education
- Critical thinking, understanding the world
- Future-proofing your education.



6 exam papers altogether: 2x biology, 2x chemistry, 2 x physics.
Each paper is 1h15mins (1hr45mins for separate).

	Biology	Chemistry	Physics
Paper 1	12th May	20th May	2nd June
Paper 2	8th June	12th June	15th June



How is science assessed?

Combined Foundation

- Combined grades, 11-55 (set 4-7)

Combined Higher

- Combined grades, 44-99 (set 2 and 3)

Separate Higher

- Separate grades for each science, 4-9 (set 1s)

Grades are worked out on an average of all their science papers

6 exam papers altogether: 2x biology, 2x chemistry, 2 x physics.
Each paper is 1h15mins (1hr45mins for separate).

What's on each exam paper?

Biology

- **Paper 1:**
- B1 Cell biology
- B2 Organisation
- B3 Infection & response
- B4 Bioenergetics
- **Paper 2:**
- B5 Homeostasis & response
- B6 Inheritance, variation & evolution
- B7 Ecology

Chemistry

- **Paper 1:**
- C1 Atomic structure & periodic table
- C2 Bonding & structure
- C3 Quantitative chemistry
- C4 Chemical changes
- C5 Energy of changes
- **Paper 2:**
- C6 Rate and extent of reactions
- C7 Organic chemistry
- C8 Chemical analysis
- C9 Earth and atmosphere
- C10 Using resources

Physics

- **Paper 1:**
- P1 Energy
- P2 Electricity
- P3 Particle model of matter
- P4 Atomic structure
- **Paper 2:**
- P5 Forces
- P6 Waves
- P7 Magnetism
- P8 Space* (***separate only***)



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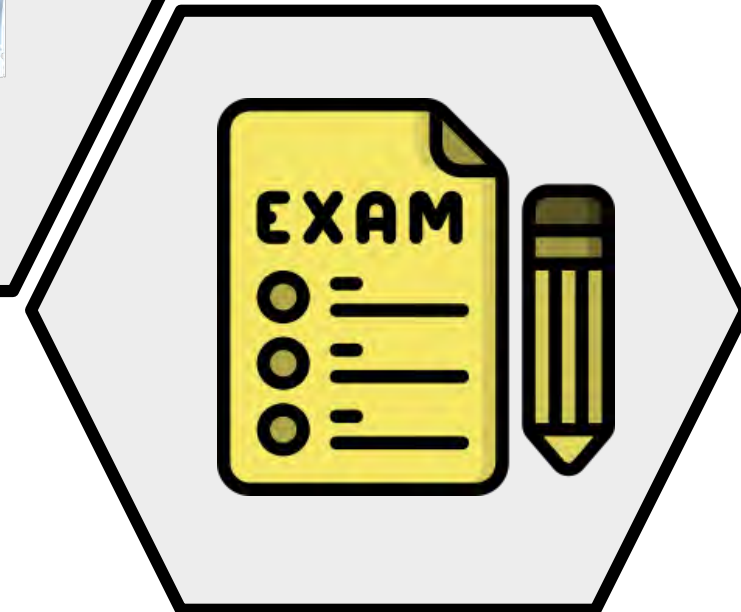
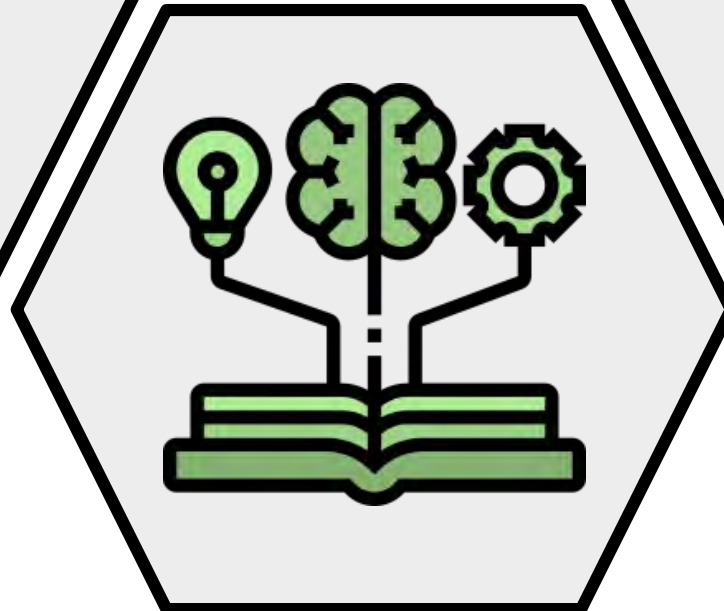
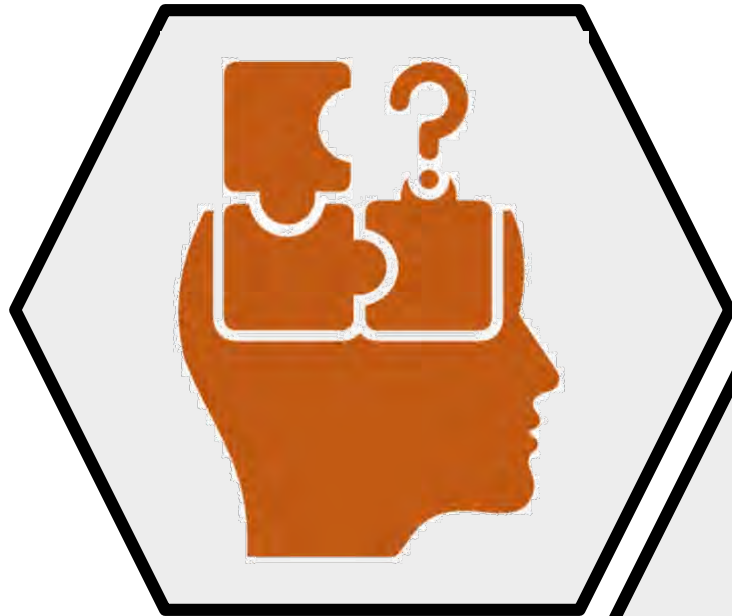
Independent Study Program

Step 1
Identify Gaps

Step 2
Relearn

Step 3
Recall

Step 4
Practice





Step 1 Identifying Gaps



This step is crucial because it pinpoints areas where **understanding is weak**, allowing students to focus revision efforts effectively.



Educake
Online Formative Assessment

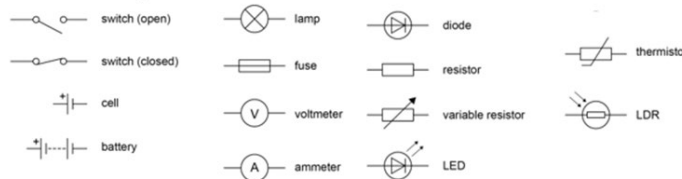
KNOW more REMEMBER more
KNOW more REMEMBER more

GCSE Physics:
Foundation/Higher/Separate

P2 - Electricity

Review the checkpoints below. You should make flashcards on any point that you don't feel confident on and practice them until you do.

☐ The different circuit symbols:



☐ For current to flow, there must be a closed circuit and a source of potential difference (battery/cell).

☐ Electric current is the rate of flow of charge.

☐ Current is measured using an ammeter connected in series.

☐ Potential difference is measured using a voltmeter connected in parallel.

☐ Charge is measured in coulombs. Current is measured in amps. Potential difference is measured in volts. Resistance is measured in ohms.

AQA Combined Science: Chemistry Paper 1
Higher Content Evaluation Sheet

Use your paper to calculate the marks awarded for each topic area in the table. To do this, add together the number of marks you achieved for each question listed in the second column. The third column tells you the total number of marks available for each topic area.

Topic Area	Question	Marks Available	Marks Awarded	How Do You Feel about Your Progress in This Topic?
Atomic Structure and the Periodic Table				
Atomic Structure	02.1 02.2 02.3 02.4	11		
The Periodic Table	01.2 01.3 01.4 01.5	9		
Bonding, Structure and the Properties of Matter				
Chemical Bonds	04.1 05.1	2		
How Bonding and Structure are Related to the Properties of Substances	01.1 04.3	4		
Structure and Bonding of Carbon	04.4	4		
Quantitative Chemistry				
Chemical Measurements, Conservation of Mass and Chemical Equations	04.2 06.1 06.2	9		
Use of Amount of Substance in Relation to Masses of Pure Substances	03.2 03.3 05.2	8		
Chemical Changes				
Reactivity of Metals	03.1 05.3	3		
Reactions of Acids	07.4 07.6 07.7	6		
Electrolysis	03.4 03.5 03.6	6		
Energy Changes				
Exothermic and Endothermic Reactions	07.1 07.2 07.3 07.5	8		

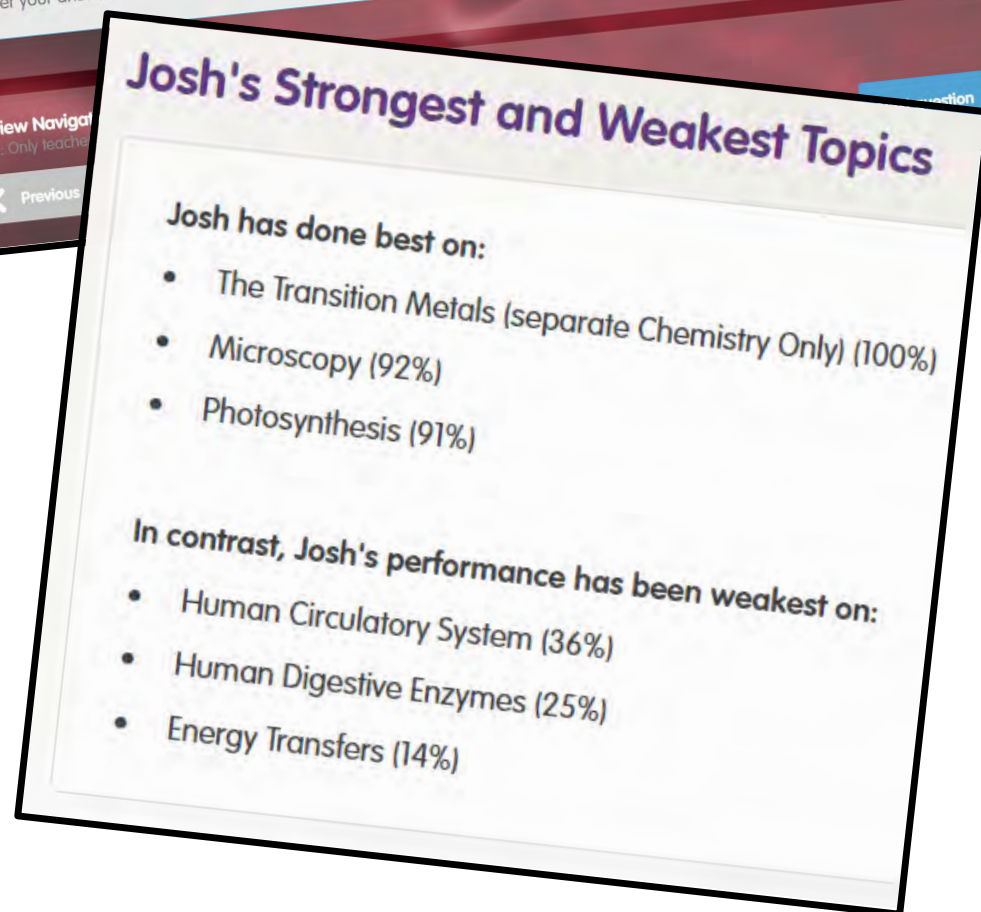
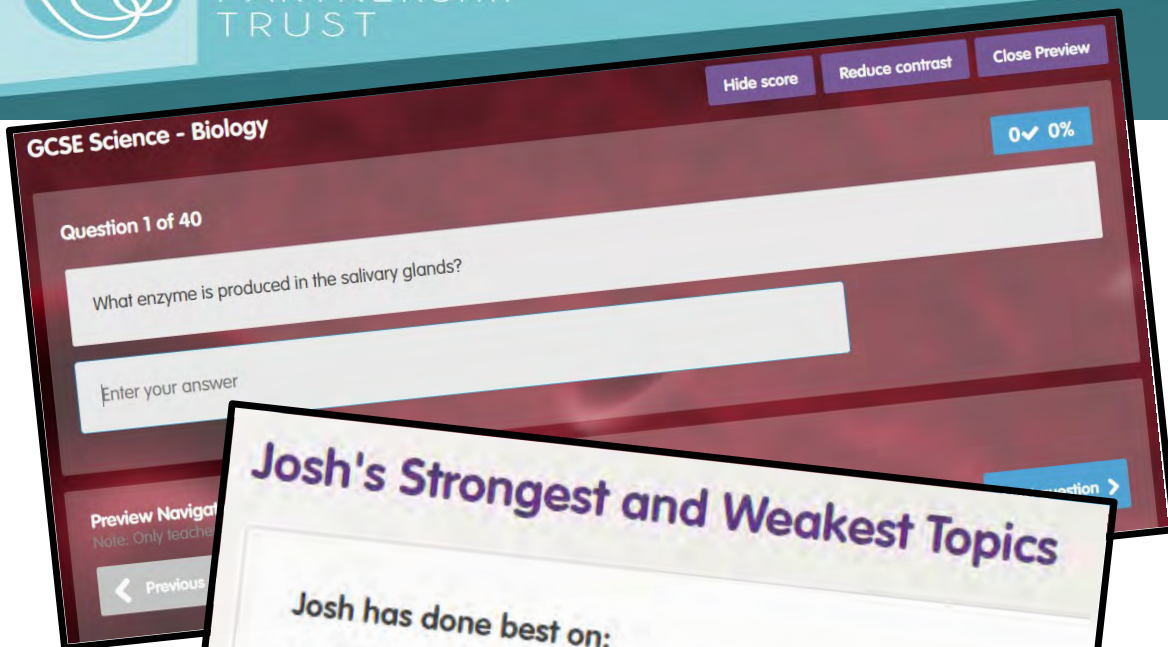
Which topics did you do really well in?

What measures will you put in place to improve next time?



Teachers can set quizzes, but students can set their own quizzes themselves.

Tests mark themselves so they get immediate feedback and strengths & targets.



Performance by Subject

	Percentage Correct	Questions Answered
Biology	69%	633
Chemistry	65%	504
Physics	62%	365
Maths for Science	0%	0
Working Scientifically	0%	0



Step 2 Relearn



BBC bitesize

<https://www.bbc.co.uk/bitesize/examspecs/z8r997h>

The collage shows three overlapping pages from the BBC Bitesize website:

- Topics Page:** Lists various biology topics including Podcasts, Exam practice, Biology (Combined Science), Infection and immunity, Bioenergetics, Homeostasis and response, Inheritance, variation and evolution, Ecology, and Practical skills.
- Cell structure - AQA >:** Features revision resources: a 'Revise' button, a 'Video' icon, an 'Audio' icon, and a 'Test' icon.
- Cell structure test questions - AQA test Trilogy:** Contains two multiple-choice questions:
 - 1** What is the function of a ribosome?
 - ☐ To release energy from glucose
 - ☐ Protein synthesis
 - ☐ To build sugars by photosynthesis
 - 2** A type of white blood cell called a macrophage is 10^{-5} m. What does it measure in micrometres?
 - ☐ 5 μm
 - ☐ 50 μm
 - ☐ 500 μm
- Eukaryotes and prokaryotes:** Explains that bacteria are single-celled organisms with simpler structures than animals, plants, and fungi. It defines prokaryotic cells (bacteria) and eukaryotic cells (animals, plants, fungi). It includes diagrams of a bacterial cell, an animal cell, and a plant cell, with a bracket grouping the latter two as eukaryotic cells.

Similar to an online revision guide, organised in topic order with clear information and videos to help understand a topic.

Ensure your child is on the correct revision page, i.e. AQA combined science.



Step 2 Relearn

Revision guides



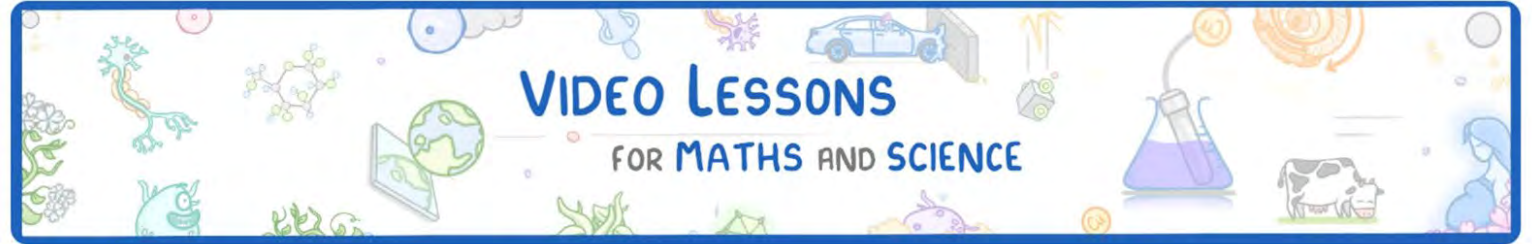
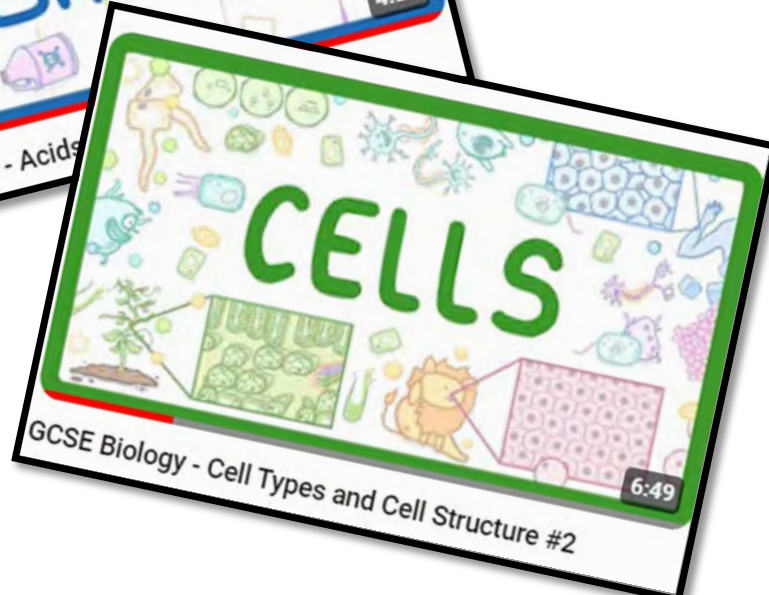
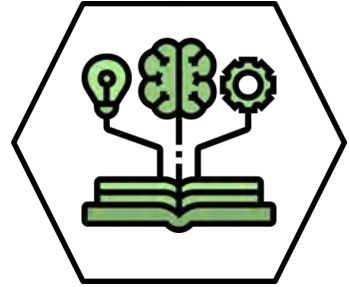
Revision Biology (Separate) - BAR46	3.30
Revision Chemistry (Separate) - CAR46	3.30
Revision Physics (Separate) - PAR48	3.30
Workbook Biology (Separate) - BAQ42	3.30
Workbook Chemistry (Separate) - CAQ42	3.30
Workbook Physics (Separate) - PAQ42	3.30
Biology Revision Cards (Separate) - BAF41	5.80
Chemistry Revision Cards (separate) - CAF41	5.80
Physics Revision Cards (Separate)- PAF41	5.80



Revision Guide Combined Higher - SAHR46	6.35
Workbook Combined Higher - SAHQ42	6.35
Revision Guide Combined Foundation - SAFR46	6.35
Workbook Combined Foundation - SAFQ42	6.35
Question Cards - All-in-one(for Combined Higher and Foundation) - SCAF41	10.35



Step 2 Relearn



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Hi - we make video lessons for GCSE science and maths. The lessons give a concise run th... >

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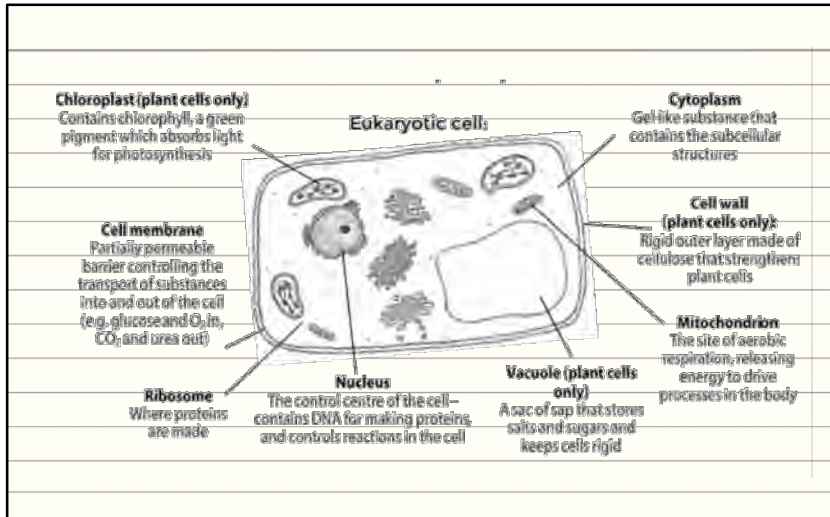
Students must do something that allows them to process the information – just reading it will not allow it to become long term memory

Short (5min) video clips that cover a small part of the science course.



Step 2 Relearn

Front



Back

1. List three structures found only in plant cells, but not animal cells
2. Explain the difference between passive transport and active transport across the cell membrane.
3. Where in a eukaryotic cell does cellular respiration occur, and what are the key products of this process

If you use this technique, it is important to remember that the creation of the flashcards does not represent the end point of revision for this topic.

The next crucial step is to test how well you can recall the information on the flashcard (Retrieval).

Students must do something that allows them to process the information – just reading it will not allow it to become long term memory

Top Tips

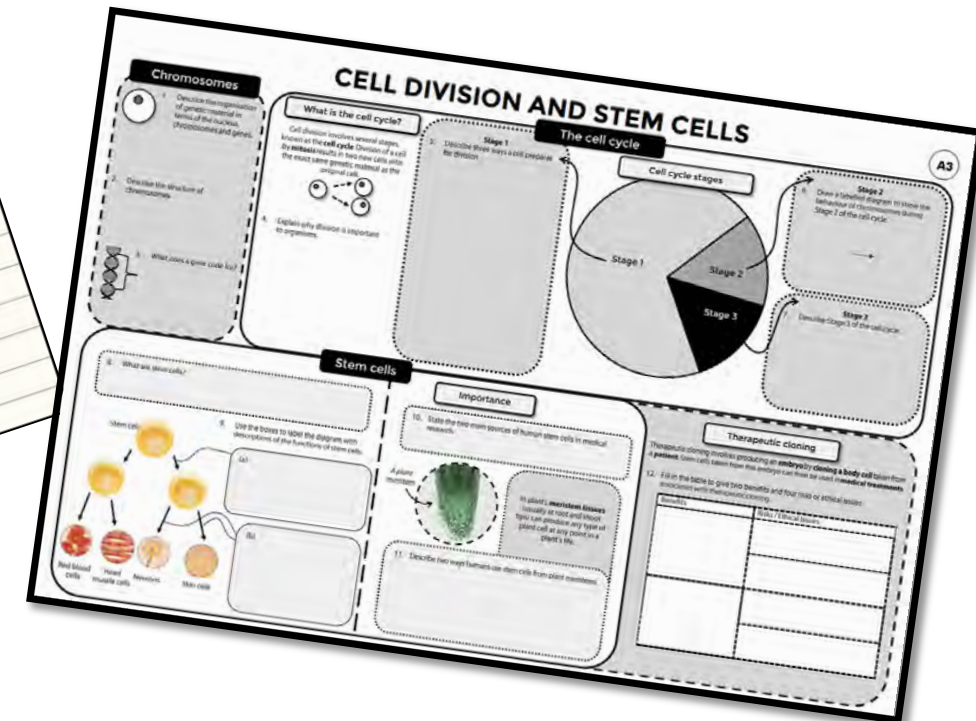
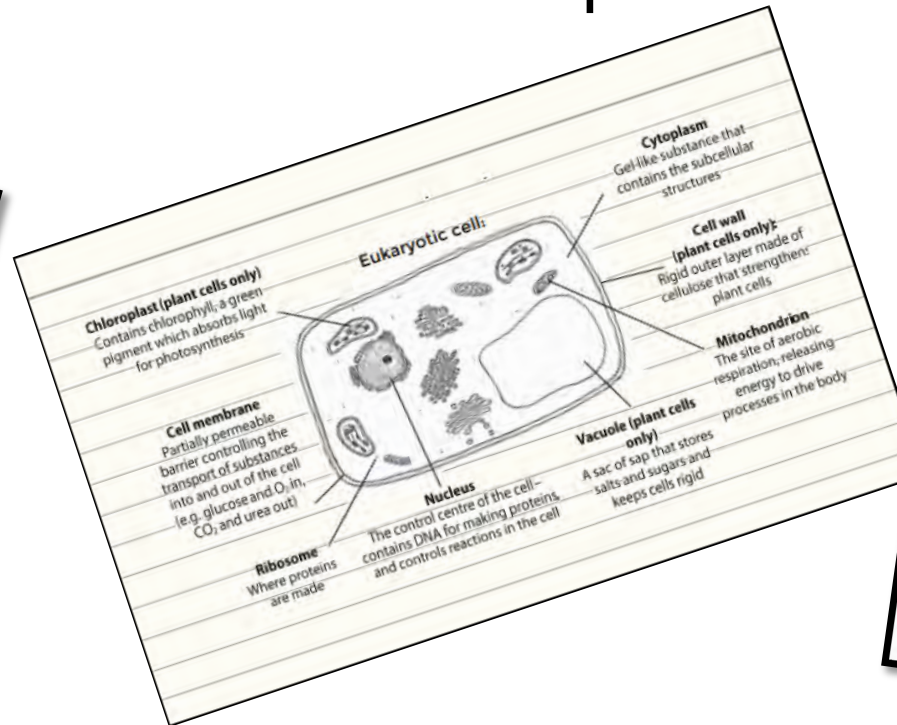
- **Pick one concept per card:**
- **Questions** on one side, answers/information on the other
- **Keep it concise:** Focus on key terms and important details.
- **Draw diagrams** and use colour. (dual coding)



Step 3 Recall



This stage should be testing that you have learnt the new knowledge.
This step helps consolidate understanding and identify areas that still need improvement.





Step 3 Recall

CELL DIVISION AND STEM CELLS

A3

Chromosomes

1. Describe the organisation of genetic material in terms of the nucleus, chromosomes and genes.
2. Describe the structure of chromosomes.
3. What does a gene code for?

What is the cell cycle?

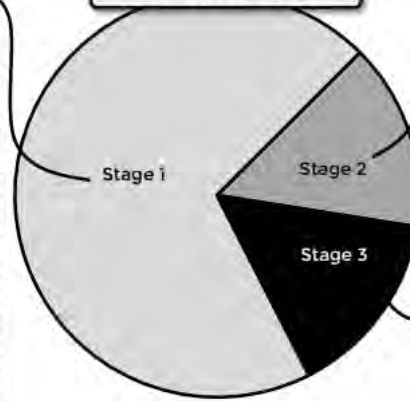
Cell division involves several stages, known as the **cell cycle**. Division of a cell by **mitosis** results in two new cells with the exact same genetic material as the original cell.



4. Explain why division is important to organisms.

The cell cycle

Cell cycle stages



Stage 1

5. Describe three ways a cell prepares for division.

Stage 2

6. Draw a labelled diagram to show the behaviour of chromosomes during Stage 2 of the cell cycle.



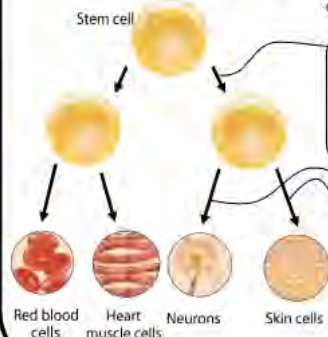
Stage 3

7. Describe Stage 3 of the cell cycle.

Stem cells

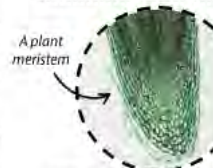
8. What are stem cells?

9. Use the boxes to label the diagram with descriptions of the functions of stem cells.



Importance

10. State the two main sources of human stem cells in medical research.



In plants, **meristem tissues** (usually at root and shoot tips) can produce any type of plant cell at any point in a plant's life.

11. Describe two ways humans use stem cells from plant meristems.

Therapeutic cloning

Therapeutic cloning involves producing an **embryo** by **cloning a body cell** taken from a **patient**. Stem cells taken from this embryo can then be used in **medical treatments**.

12. Fill in the table to give two benefits and four risks or ethical issues associated with therapeutic cloning.

Benefits	Risks / Ethical Issues

Try and complete retrieval grids from **memory**.

Revisit any gaps in knowledge before moving on to exam style questions



Step 4 Practice



Once secure in the knowledge and understanding it is time to start applying this to exam questions

AQA

Please write clearly in block capitals.

Centre number

Surname

Forename(s)

Candidate signature

Candidate number

I declare this is my own work.

**GCSE
COMBINED SCIENCE: TRILOGY**

Foundation Tier
Biology Paper 1F

Tuesday 16 May 2023

Materials
For this paper you must have:

- a ruler
- a scientific calculator.

Instructions

- Use black ink or black ball-point pen.
- Pencil should only be used for drawing.
- Fill in the boxes at the top of this page.
- Answer all questions in the spaces provided.
- If you need extra space for your answer(s), use the lined pages at the end of this book. Write the question number against your answer(s).
- Do all rough work in this book. Cross through any work you do not want to be marked.
- In all calculations, show clearly how you work out your answer.

Information

- The maximum mark for this paper is 70.
- The marks for questions are shown in brackets.
- You are expected to use a calculator where appropriate.
- You are reminded of the need for good English and clear presentation in your answers.

Time allowed: 1 hour 15 minutes

For Examiner's Use	
Question	Mark
1	
2	
3	
4	
5	
6	
7	
TOTAL	

P1. States of Matter
The structures of four substances, A, B, C and D, are represented in Figure 1

Figure 1

(A) Use the correct letter, A, B, C or D, to answer each question.

(i) Which substance is a gas? (1)

(ii) Which substance is a liquid? (1)

(iii) Which substance is an element? (1)

(iv) Which substance is made of ions? (1)

(D) Figure 2 shows the bonding in substance C.

Figure 2

(i) What is the formula of substance C? (1)
Draw a ring around the correct answer.
 SO_2 SO S_2O

(ii) Use the correct answer from the box to complete the sentence.
When a sulfur atom and an oxygen atom bond to produce substance C, electrons are (1)
delocalised shared transferred

(iii) What is the type of bonding in substance C? (1)
Draw a ring around the correct answer.
covalent ionic metallic

Q2. Chemical Bonds
The diagram represents a magnesium atom

(A) Use words from the box to answer these questions.
electron neutron nucleus proton (1)

(i) What is the name of the central part of the atom? (1)

(ii) What is the name of the particle with no charge? (1)

(iii) What is the name of the particle with a negative charge? (1)

(iv) What is the name of the particle with a positive charge? (1)

(B) Use the diagram above to help you answer these questions.

(i) Draw a ring around the atomic (proton) number of this magnesium atom. (1)
12 24 36

(ii) Draw a ring around the mass number of this magnesium atom. (1)
12 24 36

How can you help as a parent?

- No distractions (no phones, no TV, no headphones)
- Help them plan when/how to revise – little and often
- Quiz them using their Q&A flashcards
- If they are struggling encourage them to keep going and if they are really stuck ask the teacher
- Encourage them to use exam questions and mark schemes
Challenge yourself – if its too easy its probably not effective!