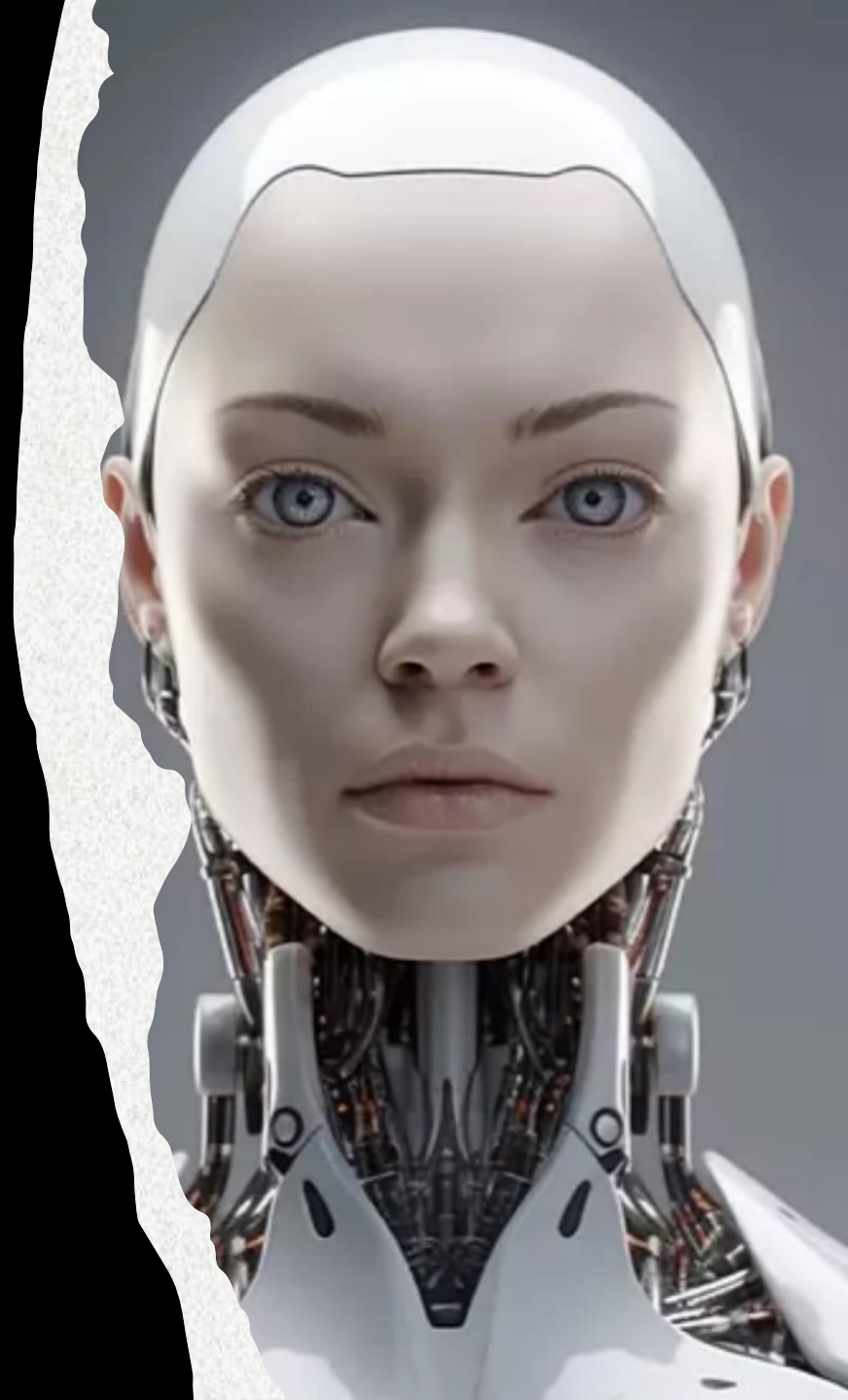




Why Science?



AQA GCSE Science 9-1



Combined Science

Biology

Chemistry

Physics

Two papers for each science discipline, each one is **1 hour and 15 minutes** long.

7.5 HOURS OF EXAMS

Triple Science

Biology

Chemistry

Physics

Two papers for each science discipline, each one is **1 hour and 45 minutes** long.

10.5 HOURS OF EXAMS

Revising one Page in the Revision Guide

Step 1- Understand It



Step 2- Remember It



Step 3- Apply It

Stem Cells

Stem cell research is pretty **exciting**... but not everyone agrees it should be done.

Stem Cells can Differentiate into Different Types of Cells

- 1) Cells **differentiate** (change) to become **specialised** for their job (see p.14).
- 2) **Undifferentiated** cells are called **stem cells**.
- 3) Stem cells can produce lots **more** undifferentiated cells and differentiate into **different types of cell**.
- 4) Stem cells found in early **human embryos** are called **embryonic stem cells**.
- 5) Embryonic stem cells can turn into **any** kind of cell at all.
- 6) **Adults** also have stem cells. They're only in **certain places** in the body, like **bone marrow** (a tissue inside bones).
- 7) Adult stem cells can **only** produce **certain types** of specialised cell, e.g. blood cells.
- 8) Stem cells from embryos and bone marrow can be **cloned** (copied) in a lab. The cloned cells can be used in **medicine** or **research**.

Stem Cells May Be Able to Cure Many Diseases

- 1) **Embryonic stem cells** could be used to **replace faulty cells** in sick people.
E.g. you could make **nerve cells** for people with **paralysis** (where they can't move part of the body due to an injury to their spine) or **insulin-producing cells** for people with **diabetes** (see page 62).
- 2) It's possible to **make an embryo** that has the **same genes** as a **patient**. This is called **therapeutic cloning**.
- 3) This means that the **stem cells** from the embryo **wouldn't** be **rejected** by the patient's body.
- 4) However, there are **risks** involved in using stem cells in medicine. For example, the stem cells could be **infected** with a **virus**. The virus could be **passed on** to a patient and make them **sicker**.

Some People Are Against Stem Cell Research

- 1) Some people feel embryos **shouldn't** be used for research because each one could be a **human life**.
- 2) Others think that **curing patients** who are **suffering** is **more important** than the rights of embryos.
- 3) They argue that the embryos used in the research are usually **unwanted ones** from **fertility clinics**. If they weren't used for research, would probably just be **destroyed**.
- 4) Some people feel that scientists should be finding **other sources** of stem cells.



Stem Cells Can Produce Identical Plants

- 1) Plants have tissues called **meristems**. Meristems are where **growth** occurs — in the tips of **roots** and **shoots**.
- 2) The meristems contain **stem cells** that can differentiate into **any type** of plant cell. They can do this all through the plant's **entire life**.
- 3) These stem cells can be used to make **clones** (identical copies) of plants **quickly** and **cheaply**. Clones can be made of:
 - **rare species** (to prevent them being wiped out).
 - **crop plants** that have **features** that are useful for farmers, e.g. plants **aren't killed** by a **disease**.

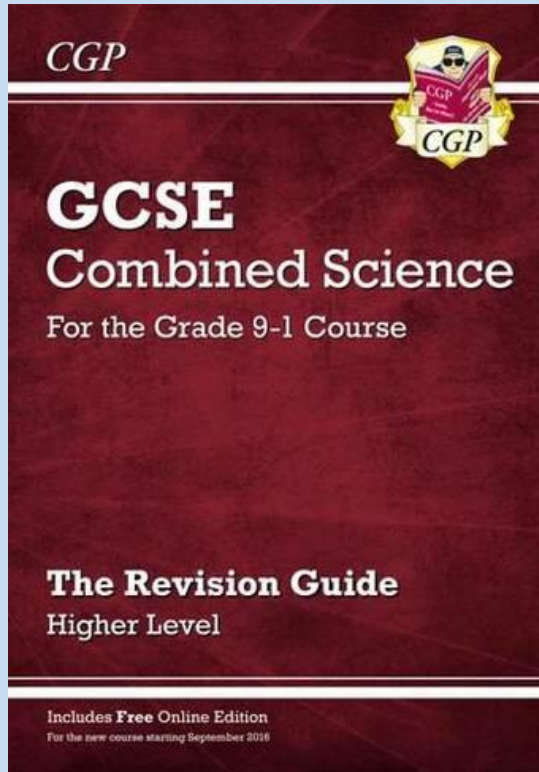
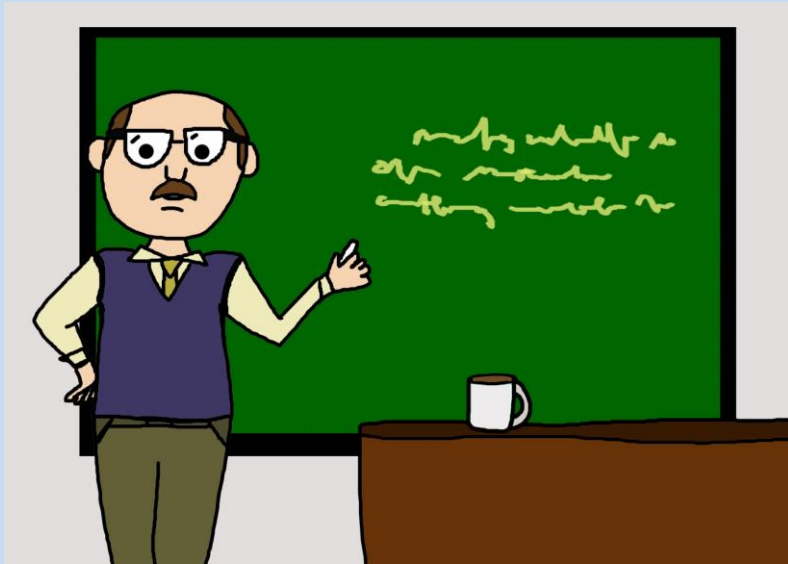
But florists cell stems, and nobody complains about that...

Stem cells are pretty clever. Make sure you know the uses of stem cells and the arguments about using them.

Q1 How can stem cells be used to preserve rare plant species? [2 marks]



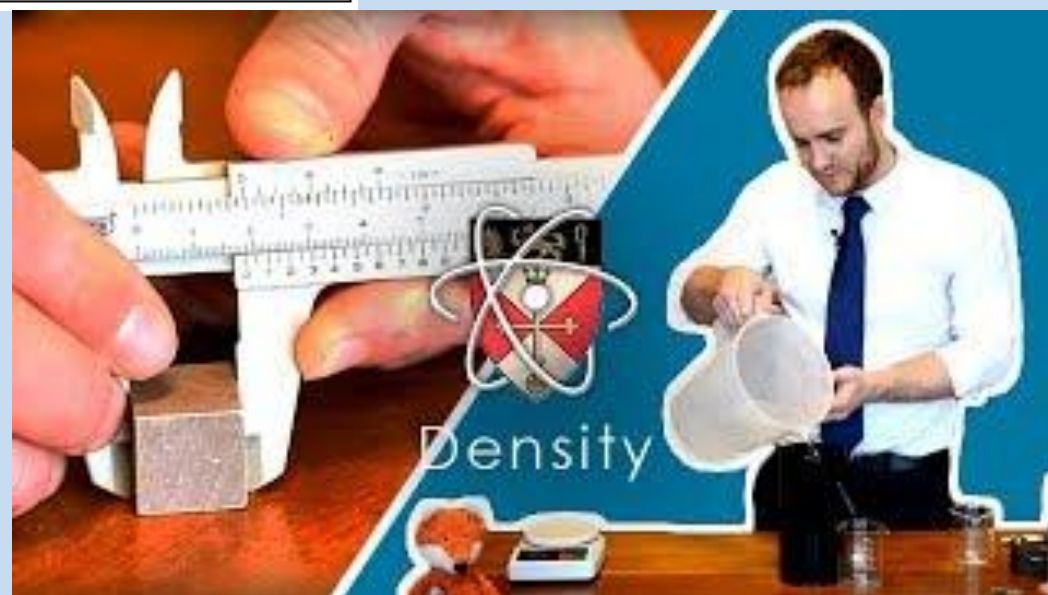
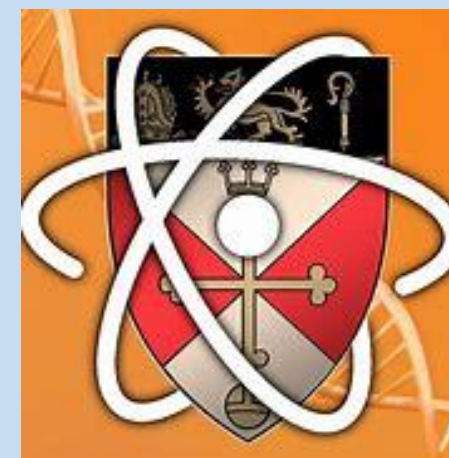
Understand it



Required Practical Activities

Students are expected to learn a variety of different required practical activities. Below is a list of all the experiments students should know. These experiments are all demonstrated on You Tube (Malmesbury Education). The ones in bold and italics are assessed in the paper 2 exams only.

Biology	Chemistry	Physics
Microscopy	Making Salts	Specific Heat Capacity
Culturing Bacteria (Triple)	Titrations (Triple)	Thermal Insulation (Triple)
Osmosis	Electrolysis	Resistance
Enzymes	Temperature Changes	I-V Characteristics
Food Tests	<i>Rates of Reaction</i>	Density
Photosynthesis	<i>Chromatography</i>	<i>Force and Extension</i>
<i>Reaction Tome</i>	<i>Identifying Ions (Triple)</i>	<i>Acceleration</i>
<i>Germination (Triple)</i>	<i>Water Purification</i>	<i>Refraction</i>
<i>Sampling</i>		<i>IR Radiation and Absorption</i>
<i>Decay (Triple)</i>		<i>Reflection (Triple)</i>



Remember it

The more the information is pulled out the brain the more likely it will stick!



Using Educake

Educake allows you to:

- Make your own quizzes
- Study all the content
- Complete quizzes set by your teachers.

My Educake

Revision wizard >

Your Upcoming Quizzes [View all your quizzes](#)

Subject	Quiz name	Assigned by	Due
Biology	Blood (13 Qs)	Ms Ribosome	-
Chemistry	Electrolysis for you (6 Qs)	Ms Ribosome	-
Geography	Variations in economic development (12 Qs)	Mr Morraine	2 months ago

Study and Quiz Yourself **KS3** **GCSE**

GCSE Science – AQA	72%
Biology	75%
Chemistry	60%
Physics	69%
Maths for Science	80%
Working Scientifically	80%
GCSE Geography – AQA	68%
GCSE English – AQA	65%
GCSE Maths – AQA	40%
GCSE Computer Science – AQA	64%

< Back to My Educake

GCSE Science – AQA, Biology

Topic	Detail	Qs done	%
Hide all Select multiple topics			
GCSE Science – AQA		90	72%
^ Biology		28	75%
^ 4.1 Cell Biology (Paper 1)		10	80%
^ 4.2 Organisation (Paper 1)		11	64%
Principles of organisation	Organisational hierarchy, cells, tissues, organs, organ systems	0	0%
Human digestive enzymes	Function of digestive enzymes, names of enzymes, substrates, products and production sites, bile, effect of temperature and pH on enzymes, denaturing	3	33%
Human circulatory system	Heart, blood vessels, pacemakers, lungs	2	50%

Apply it

- Find Exam questions on the topic
(Stem cells AQA GCSE exam questions)

The screenshot shows a Google search results page. The search bar contains the text 'stem cells aqa gcse exam style questions'. Below the search bar, there are several search filters: Images, Pdf, Videos, And answers, News, Books, Maps, Flights, Finance. The search results show about 5,570,000 results in 0.38 seconds. The first result is from Beverley High School, titled 'Biology GCSE 9-1: Cell division and stem cells exam style ...'. The second result is from MME Revise, titled 'Stem Cells Questions and Revision'. The third result is also from MME Revise, titled '4.1.2.3 GCSE Biology, AQA, OCR, EDEXCEL. Stem Cells'. The search results are displayed in a list format with icons for each result.

- Go through past papers
- Ask your teacher for exam questions

