

SCIENCE

Year 11 Core Curriculum Evening
Perins School
2023



KEY GCSE DATES – 2024

Biology paper 1 10th May

Chemistry paper 1 17th May

Physics paper 1 22nd May

Biology paper 2 7th June

Chemistry paper 2 11th June

Physics paper 2 14th June



Separate Science Path – 3 Sciences

BIOLOGY	CHEMISTRY	PHYSICS
1. Cell Level Systems	1. Particles	1. Matter
2. Scaling up	2. Elements and Bonding	2. Forces
3. Organism Level Systems	3. Chemical Reactions	3. Electricity
4. Community Level systems	4. Predicting Chemical Reactions	4. Magnetism
5. Genetics	5. Rate of Change	5. Waves
6. Global Challenges	6. Global Challenges	6. Radioactivity
		7. Energy
		8. Global Challenges

Biology Paper 1 Units 1-3 105 minutes 90 marks	50% of GCSE	Chemistry Paper 1 Units 1-3 105 minutes 90 marks	50% of GCSE	Physics Paper 1 Units 1-4 105 minutes 90 marks	50% of
Biology Paper 2 Units 4-6 105 minutes 90 marks	50% of GCSE	Chemistry Paper 2 Units 4-6 105 minutes 90 marks	50% of GCSE	Physics Paper 2 Units 5-8 105 minutes 90 marks	

Biology GCSE 1-9	Chemistry GCSE 1-9	Physics 1-9
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Combined Science – 2 GCSE's



BIOLOGY	CHEMISTRY	PHYSICS
1. Cell Level Systems	1. Particles	1. Matter
2. Scaling up	2. Elements and Bonding	2. Forces
3. Organism Level Systems	3. Chemical Reactions	3. Electricity and magnetism
4. Community Level systems	4. Predicting Chemical Reactions	4. Waves and Radioactivity
5. Genetics	5. Rate of Change	5. Energy
6. Global Challenges	6. Global Challenges	6. Global Challenges

Biology Paper 1 Units 1-3 70 minutes 60 marks	16.7% of GCSE	Chemistry Paper 1 Units 1-3 70 minutes 60 marks	16.7% of GCSE	Physics Paper 1 Units 1-3 70 minutes 60 marks	16.7% of GCSE
Biology Paper 2 Units 4-6 70 minutes 60 marks	16.7% of GCSE	Chemistry Paper 2 Units 4-6 70 minutes 60 marks	16.7% of GCSE	Physics Paper 2 Units 4-6 70 minutes 60 marks	16.7% of GCSE



Combined Science – 2 GCSE's

BIOLOGY	CHEMISTRY	PHYSICS
1. Cell Level Systems	1. Particles	1. Matter
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5. Genetics	5. Rate of Change	5. Energy
6. Global Challenges	6. Global Challenges	6. Global Challenges

2 GCSE's
eg:5-5, 6-5, 6-6 (U up to 9-9)

Maths in Science

Equations

- Unlike previous years, the equations are not provided...
- Higher = 16 to recall and apply
- Foundation = 15 to recall and apply
- 5/6 equations will be supplied – 'Select and Apply'

density (kg/m^3) = mass (kg)/volume (m^3)

$$\rho = \frac{m}{V}$$

distance travelled (m) = speed (m/s) x time (s)

$$s = vt$$

acceleration (m/s^2) = change in velocity (m/s)/time (s)

$$a = \frac{\Delta v}{t}$$

kinetic energy (J) = 0.5 x mass (kg) x (speed (m/s))²

$$E_k = \frac{1}{2}mv^2$$

force (N) = mass (kg) x acceleration (m/s^2)

$$F = ma$$

momentum (kgm/s) = mass (kg) x velocity (m/s)

$$p = mv$$

work done (J) = force (N) x distance (m) (along the line of action of the force)

$$W = F\Delta s$$

power (W) = work done (J)/time(s)

$$P = \frac{W}{t}$$

force exerted by a spring (N) = extension (m) x spring constant (N/m)

$$F = k\Delta x$$

gravity force (N) = mass (kg) x gravitational field strength, g (N/kg)

$$W = mg$$

(in a gravity field) potential energy (J) = mass (kg) x height (m) x gravitational field strength, g (N/kg)

$$E_p = mgh$$

charge flow (C) = current (A) x time (s)

$$Q = It$$

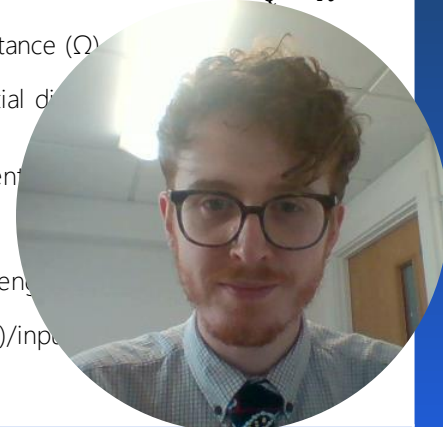
potential difference (V) = current (A) x resistance (Ω)

energy transferred (J) = charge (C) x potential difference (V)

power (W) = potential difference (V) x current (A)
(current (A))² x resistance (Ω)

wave speed (m/s) = frequency (Hz) x wavelength (m)

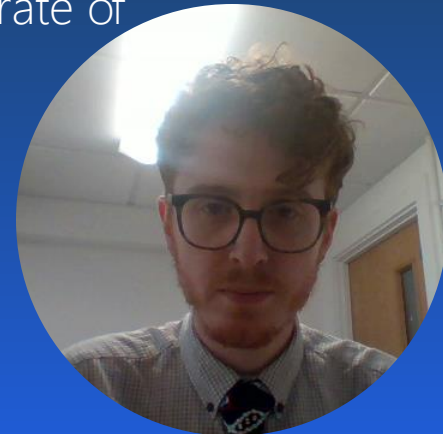
efficiency = useful output energy transfer (J)/input energy transfer (J)



Maths in Science

BIOLOGY	CHEMISTRY	PHYSICS	COMBINED SCIENCE
10%	20%	30%	20% across all papers

- Recognise and use expressions in standard form
- Significant figures
- Understand and use the symbols: =, <, <<, >>, >, \propto , ~
- Calculate areas of triangles and rectangles, surface areas and volumes of cubes
- Draw and use the slope of a tangent to a curve as a measure of rate of change
- Understand that $y = mx + c$ represents a linear relationship
- Make order of magnitude calculations



Components in Science

Assessment objectives (AOs) are set by Ofqual and are the same across all Science GCSE specifications and all exam boards. The exams will measure how students have achieved the following assessment objectives.

AO1: RECALL

AO2: APPLICATION/UNSEEN INFORMATION

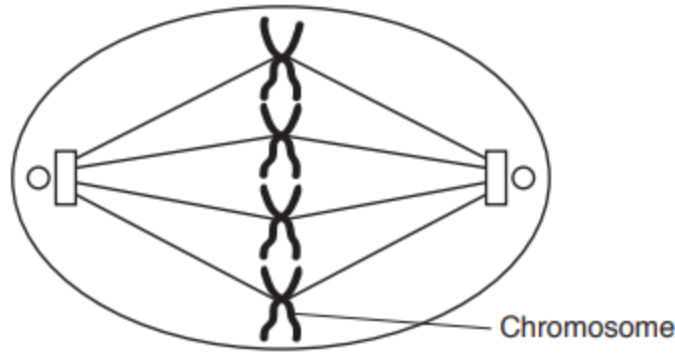
AO3: PRACTICAL SKILLS

Assessment objectives (AOs)	Component weightings (approx %)						Overall weighting (approx %)
	Biology Paper 1	Biology Paper 2	Chemistry Paper 1	Chemistry Paper 2	Physics Paper 1	Physics Paper 2	
AO1	37-43	37-43	37-43	37-43	37-43	37-43	40
AO2	37-43	37-43	37-43	37-43	37-43	37-43	40
AO3	17-23	17-23	17-23	17-23	17-23	17-23	20
Overall weighting of components	16.6	16.6	16.6	16.6	16.6	16.6	100



RECALL QUESTION

12 (a) The diagram shows a cell during one stage of mitosis.



(i) Describe **two** things that happen to the chromosomes in the next stage of mitosis.

(chromosomes) separate / split / divide / pulled apart ✓

2

2x1.1

WHERE A CANDIDATE USES A DIAGRAM
LOOK FOR THE CORRECT IDEAS LABELLED
ON THE DIAGRAM

(chromatids) move to opposite ends / by spindle fibres ✓

IGNORE just by fibres

ALLOW AS AN EXTRA MARKING POINT

(two) **new** nuclei form / membrane forms around
them / nuclear envelope forms around them ✓

IGNORE cell membrane splits

IGNORE references to DNA replication

IGNORE cytokinesis / cell splitting

[2]

(ii) Chromosomes are made of DNA.

Describe the structure of DNA.

double helix ✓

polymer ✓

ALLOW polynucleotide ✓✓

ALLOW AS EXTRA MARKING POINT

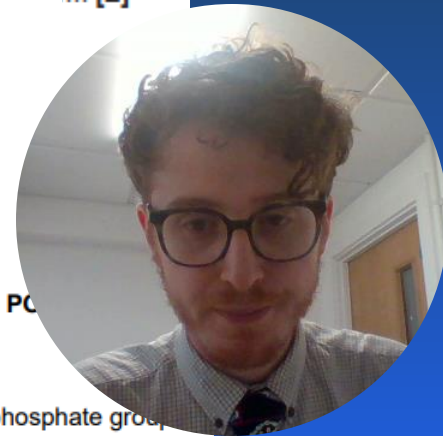
contains (four) bases ✓

reference to ATCG ✓

(made up of) nucleotides ✓

contains sugar / deoxyribose / phosphate group

IGNORE deoxyribonucleic acid



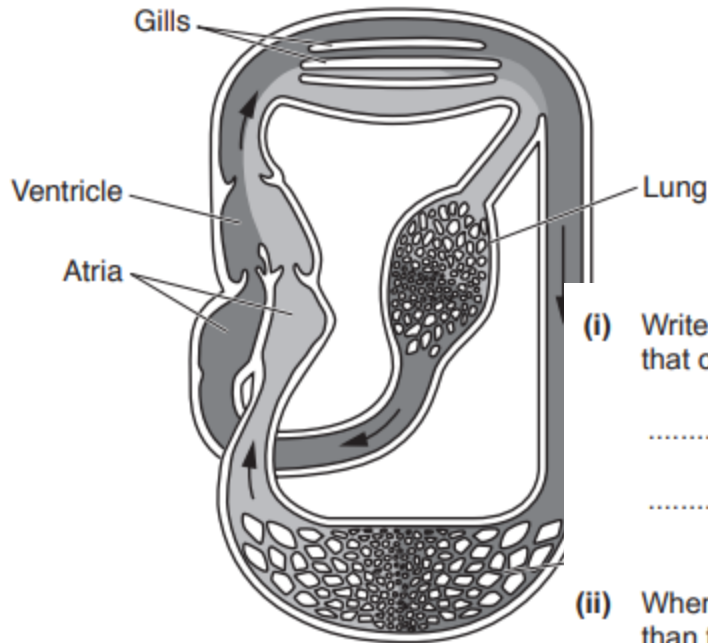
APPLY QUESTION



(b) Lungfish are fish that have both gills and a lung.

When in water, the blood flows through the gills. When on land, blood flow to the gills is stopped and the blood enters the lung instead.

The diagram shows the circulatory system of a lungfish.



(i) Write down one **other** way the **structure** of the lungfish circulatory system is different to that of humans.

- (heart has) three chambers / not four chambers ✓
- (heart has) one ventricle / not two ventricles ✓
- only one artery leaving (heart) ✓

[1]

(ii) When lungfish and humans are on land, the human circulatory system is more efficient than that of lungfish.

Suggest why the human circ.....
 (in humans) oxygenated and deoxygenated blood kept separate ✓

-
-
- (so) more **oxygen** is carried around the body / more **oxygen** is supplied to the body cells ✓

[2]

The lungfish circulatory system is different t

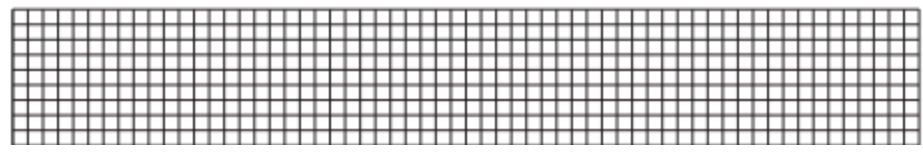
Blood in the lungfish can flow through gills a

PRACTICAL SKILLS

(b) The table shows his results.

Concentration of sugar solution (mol/dm ³)	Mass of potato chip	
	At	After
0.0	2.0	2.5
0.2	2.0	2.0
0.4	2.0	1.5
0.6	2.0	1.0
0.8	2.0	0.5
1.0	2.0	0.0

(c) Plot a graph of the percentage change in mass against concentration of sugar solution and draw a line of best fit.



Use ideas about osmosis to explain the patterns in the results.

(chips) get bigger/gain mass when **water moves in**
OR
(chips) get smaller/loses mass when **water moves out** ✓

Calculate the p

Record your an

and **any two from:**

chip in low(er) concentration (of solution) **or** 0 (mol/dm³) **or** 0.2 (mol/dm³) the water potential inside (cells) is **less** ✓

(so) water moves in when the water potential inside (cells) is **less** ✓

chip in high(er) concentration (of solution) **or** more than 0.2 mol/dm³ the water potential inside (cells) is **greater** ✓

(so) water moves out when the water potential inside (cells) is **greater** ✓

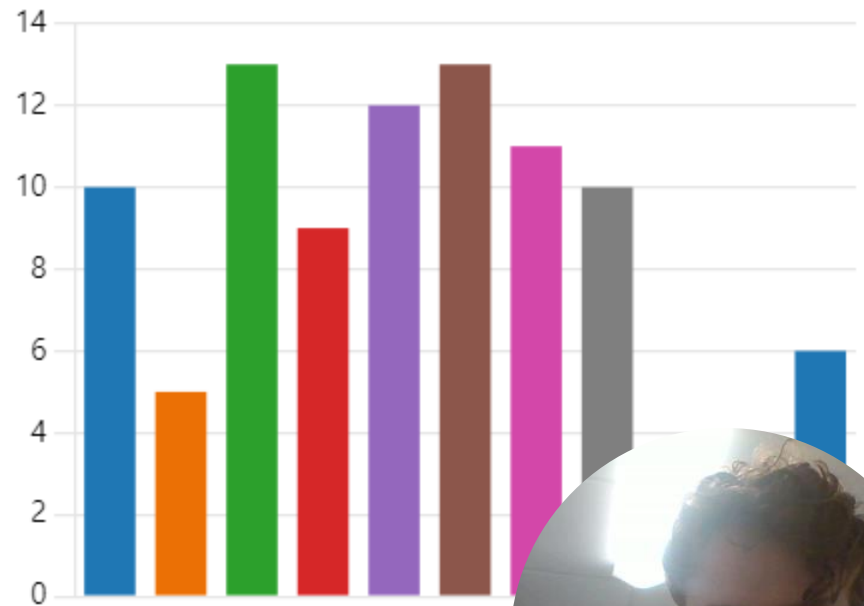


WHAT ARE STUDENTS DOING?

3. Select any of the ways you revised: (0 point)

[More Details](#)

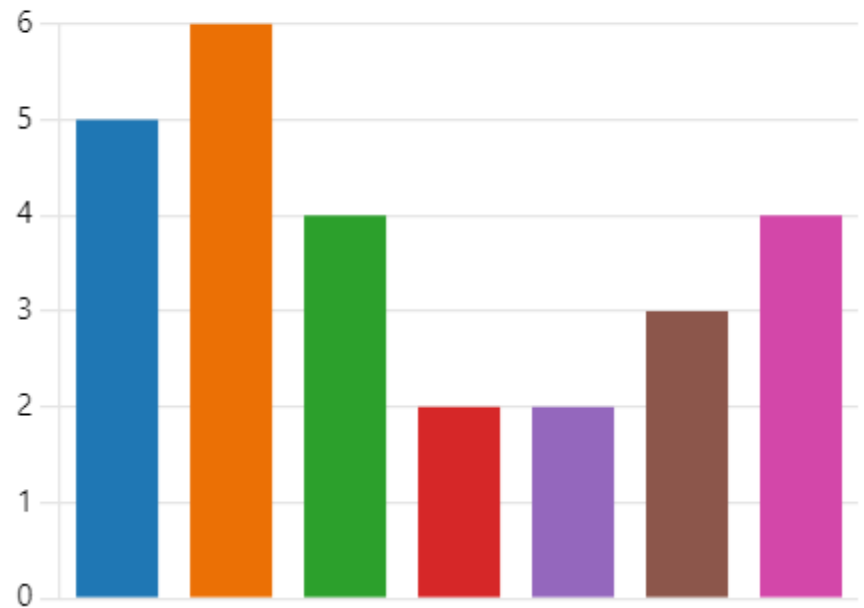
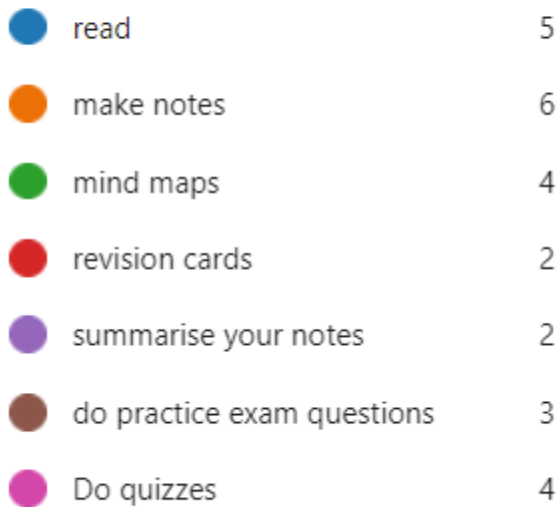
Read my class notes	10
Use the Kerboodle online textb...	5
BBC bitesize	13
You tube videos	9
Seneca learning	12
Cognito	13
Revision guides / workbooks	11
Past exam papers	10
OCR exam syllabus	1
Sharepoint revision area	0
other ---- use the next question...	6



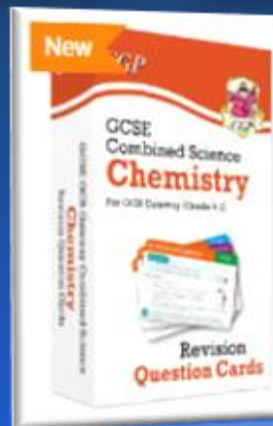
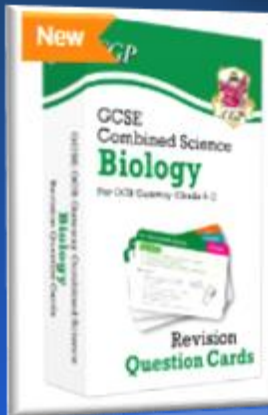
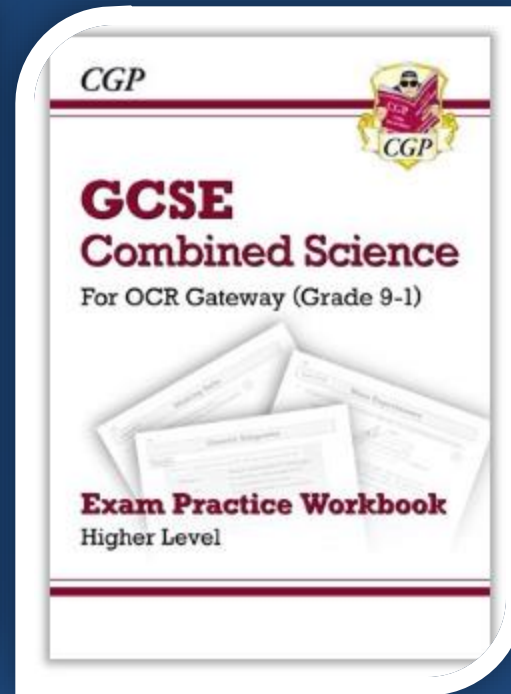
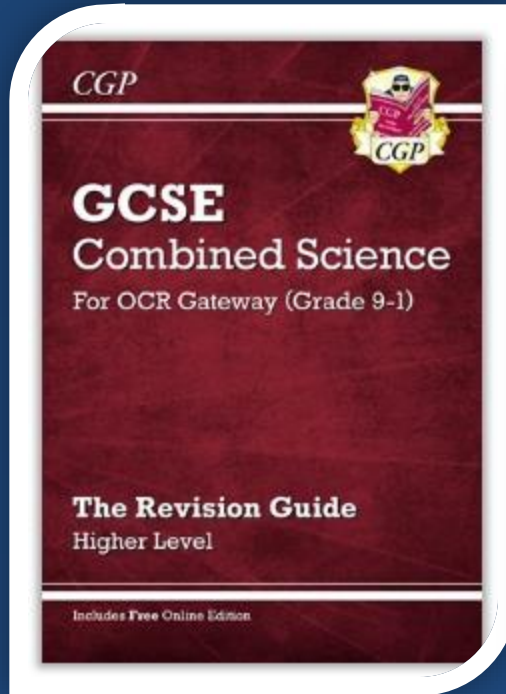
WHAT ARE STUDENTS DOING?

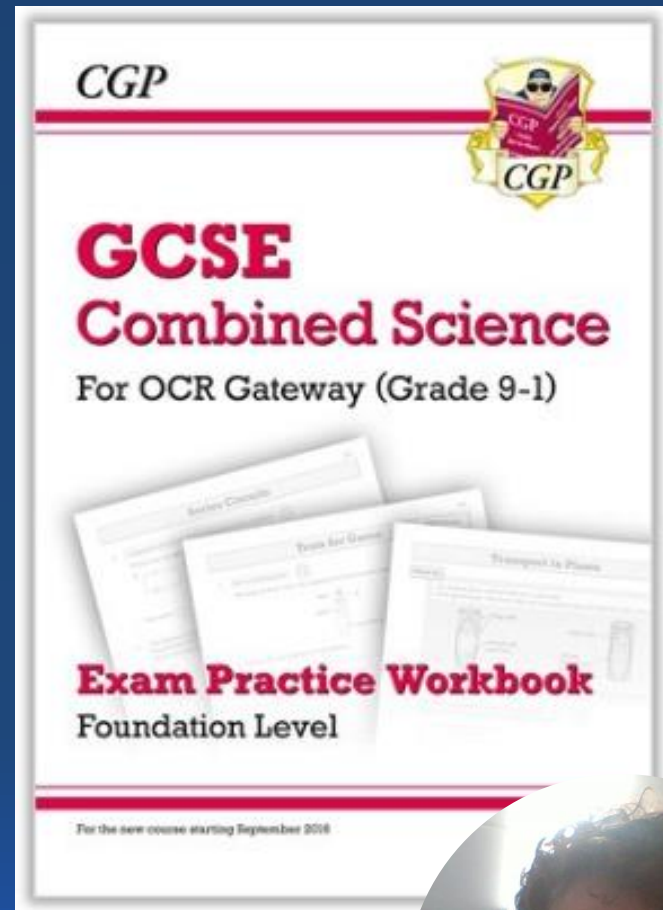
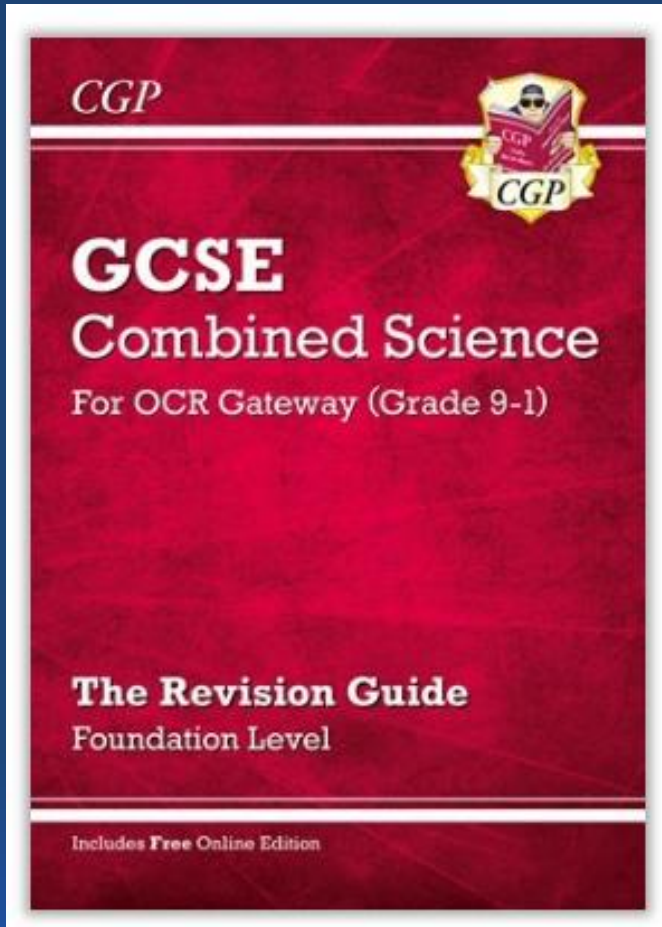
5. Which revision **methods** did you try (if any): (0 point)

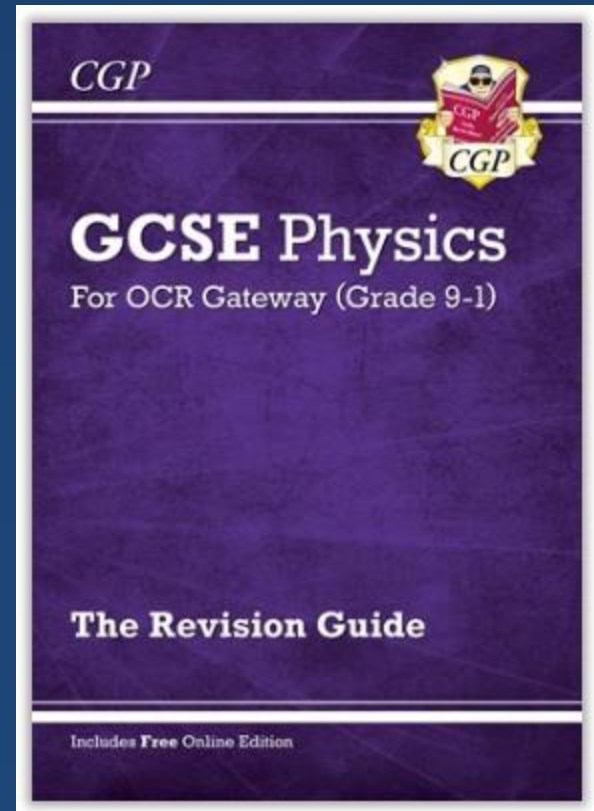
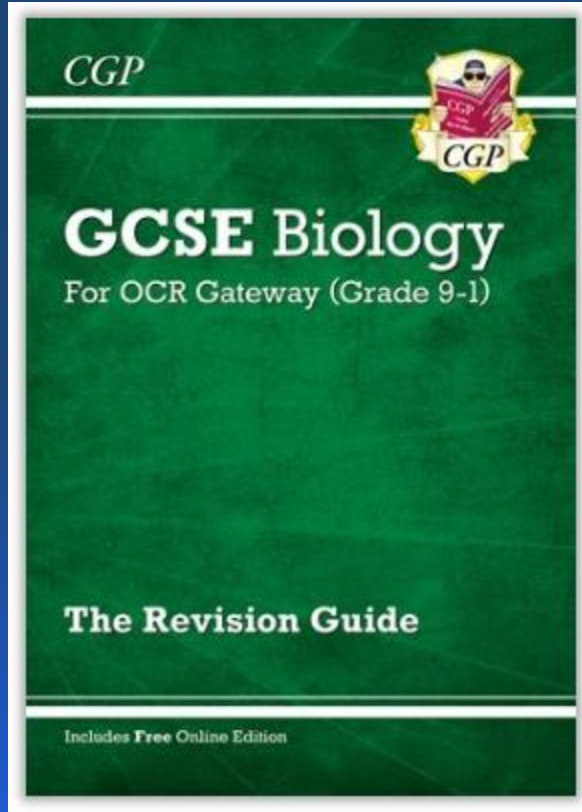
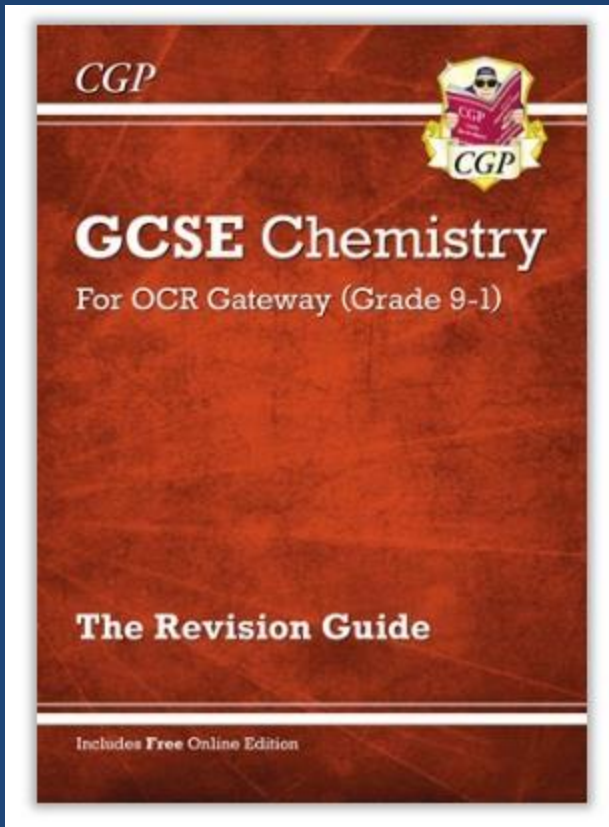
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WHAT CAN YOU DO?







CGP



GCSE Chemistry

For OCR Gateway (Grade 9-1)



Exam Practice Workbook

CGP



GCSE Physics

For OCR Gateway (Grade 9-1)



Exam Practice Workbook

CGP



GCSE Biology

For OCR Gateway (Grade 9-1)



Exam Practice Workbook

WHAT CAN YOU DO?

Bitesize

Change language -

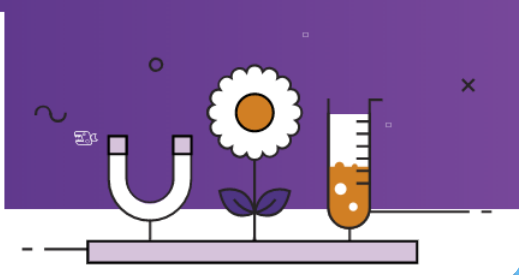
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My Bitesize | All Bitesize

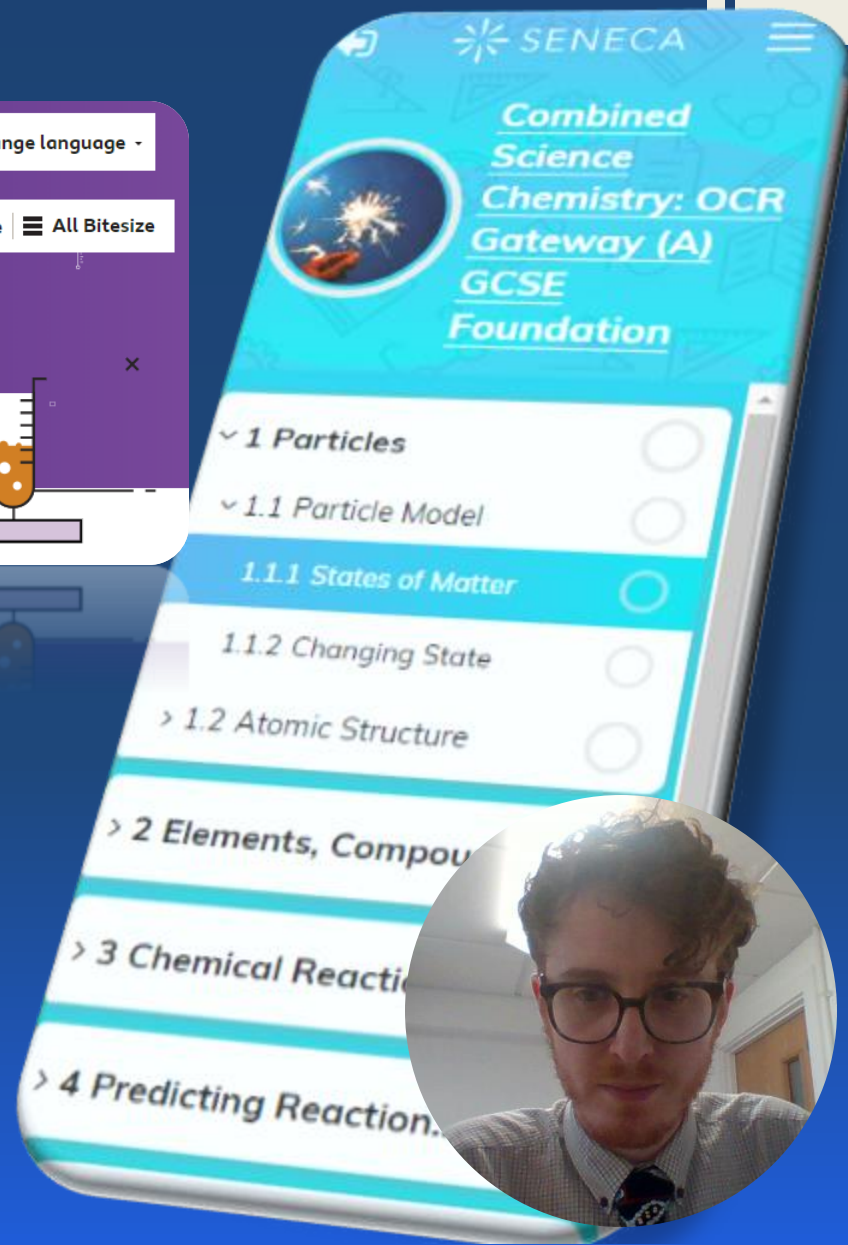
GCSE OCR Gateway

Combined Science

Part of [Combined Science](#)



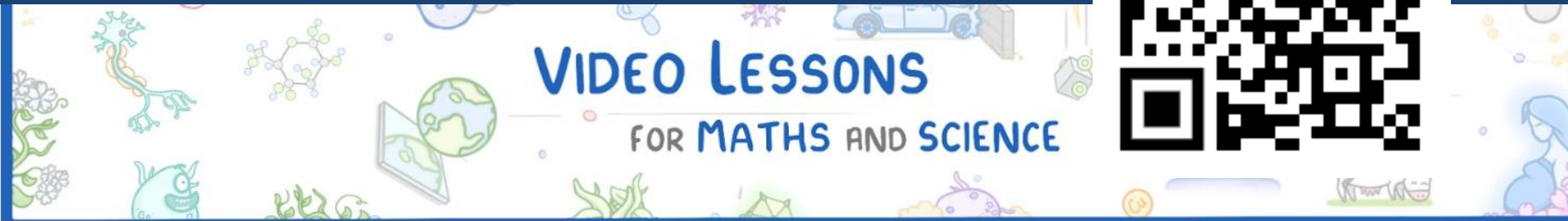
Topics



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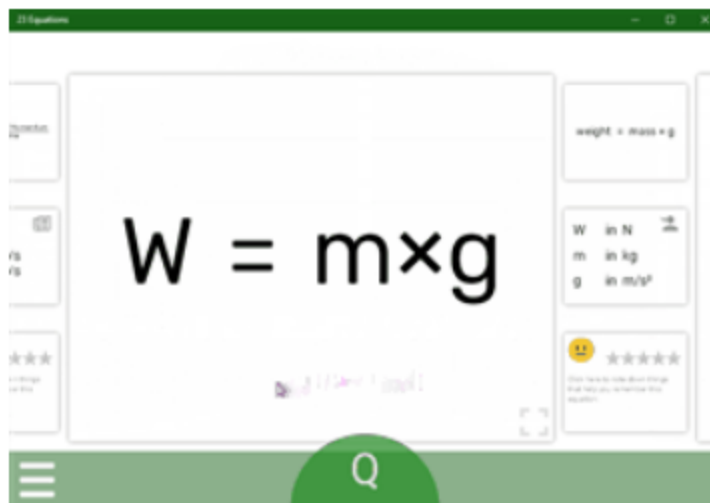
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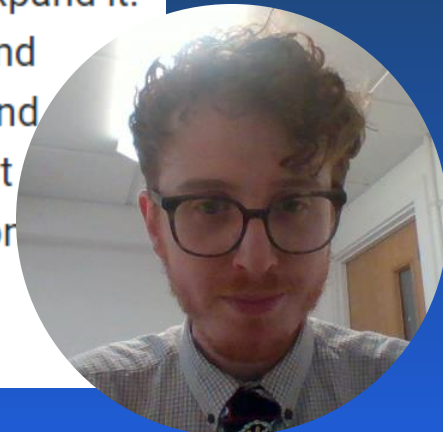
WHAT CAN YOU DO?



Learning Equations



The app works a like a pack of index cards. Tap on a section to expand it. There are word and symbol version and information about including common alternatives.



WHAT CAN YOU DO?



The banner features a cartoon scientist on the left holding a flask and a Bunsen burner. The text 'SCIENCE!' is written in a stylized font above the scientist. To the right, the text 'Free Science Lessons' is prominently displayed in a white, sans-serif font. Below this, the website 'FreeScienceLessons.co.uk' is listed. The background is a blue-toned landscape with trees and a sun or moon. A small button on the right says 'Click here to download'.



Freesciencelessons ✓

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A video player interface showing a video titled 'How to revise effectively.' The video has a black background with white text. The title is repeated in a larger font. At the bottom, there is a play button, a volume icon, and a progress bar showing '0:00 / 5:20'. There are also icons for subtitles, settings, and full screen.

How to revise effectively.

508,714 views • 3 years ago

In this video, I'm going to take you through ten top tips for effective revision. If you follow my advice, you'll put yourself in a great position to get the grades that you need.

<http://www.aqa.org.uk/subjects/scienc...>

<http://www.aqa.org.uk/subjects/scienc...>

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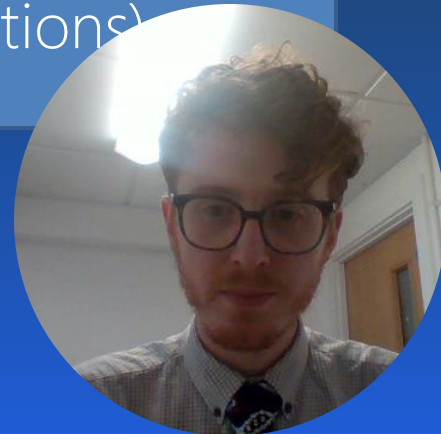
FREESCIENCELESSONS
RECOMMENDS



WHAT CAN YOU DO?

1. Encourage your child to prioritise their revision.

2. Encourage an environment where they can fully concentrate (no phones, music or distractions)



3. Reassure your child that revision isn't easy. 20 minutes trying to recall something tricky, using a revision guide to check what they missed then testing themselves is MUCH more effective than an hour copying out notes.

How to structure your revision:

Revising The Nervous System

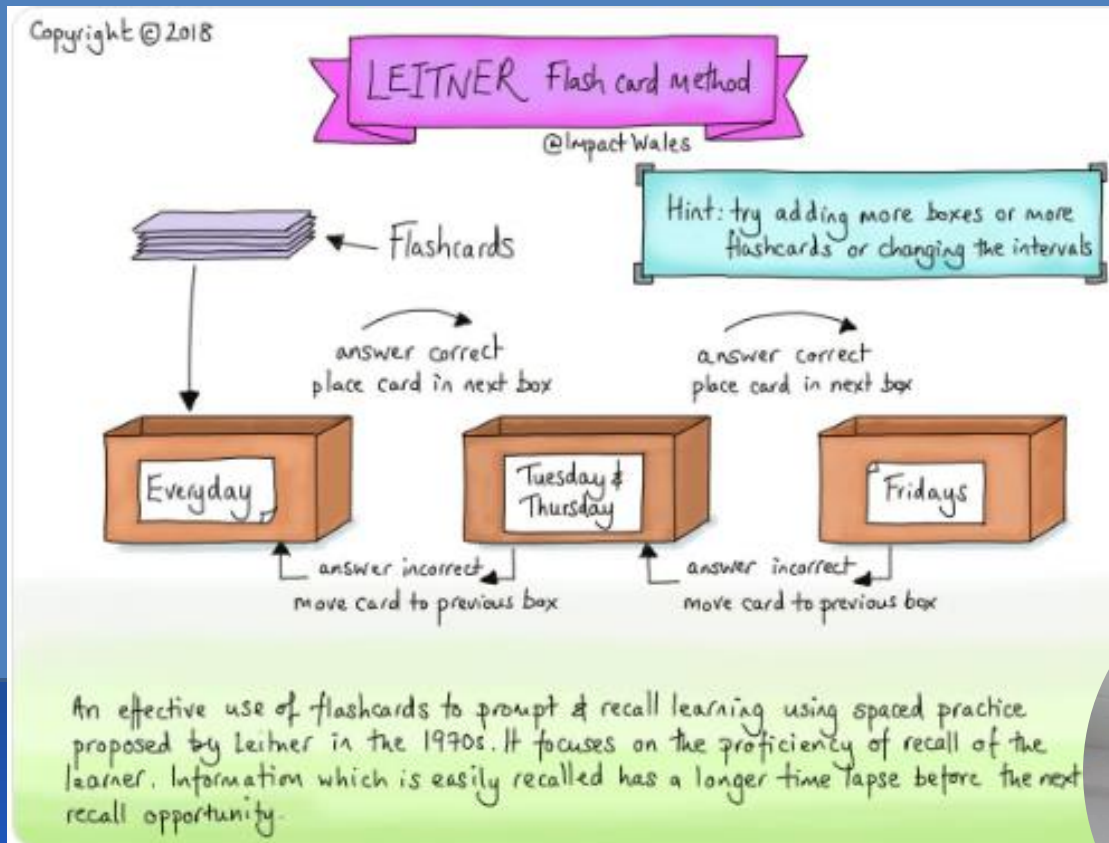
There are 4 stages to effective revision:

1. What can you remember?
2. What did you forget?
3. Independent practise of knowledge recall and application
4. Reviewing what you still need to work on after the practise questions.

Task 1: What can you remember about The Nervous System? You can write notes or draw what you know. You need to fill the box – you will probably want to add things in a bit.



4. Ask your child what they have revised – get them to explain something to you. Ask if you can test them on some flashcards, get them talking about what they should learn.



Thank you!



cognito

23 Equations



freesciencelessons

