

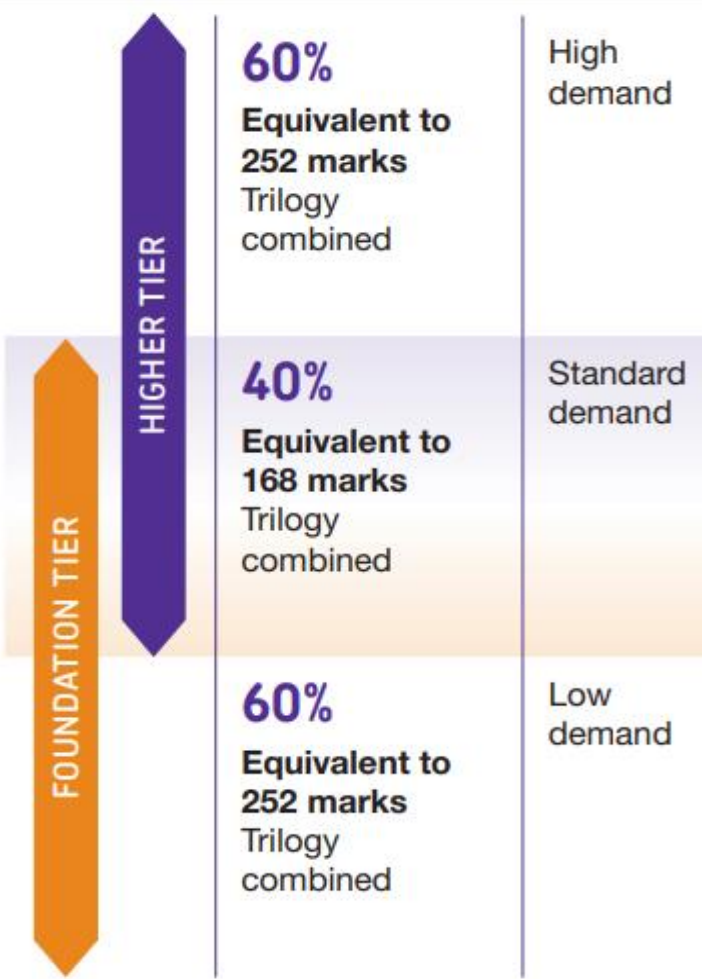


# SCIENCE

Miss Hawke

GCSE  
grades  
Combined  
Science

H	F
99	
98	
88	
87	
77	
76	
66	
65	
55	55
54	54
44	44
43	43
	33
	32
	22
	21
	11
U	U



GCSE  
grades  
Separate  
Science

H	F
9	
8	
7	
6	
5	5
4	4
3	3
	2
	1
U	U

# Combined Science

# Separate Science

Exam board AQA

Assessment consists of 6 papers altogether, two biology, two chemistry and two physics

Foundation and Higher.

**Question types:** multiple choice, structured, closed short answer and open response. 15% of GCSE marks in exams come from questions relating to practicals.

1 hour 15 minutes

Double award

2 GCSEs

1 hour 45 minutes

3 separate GCSEs

Biology, Chemistry, Physics

# EXAM DATES

## Combined Science and Triple Science

Biology	Paper 1/1	B1-4	Friday 10 <sup>th</sup> May 2024
Chemistry	Paper 2/1	C1-5	Friday 17 <sup>th</sup> May 2024
Physics	Paper 3/1	P1-4	Wednesday 22 <sup>nd</sup> May 2024
Biology	Paper 4/2	B5-7	Friday 7 <sup>th</sup> June 2024
Chemistry	Paper 5/2	C6-10	Tuesday 11 <sup>th</sup> June 2024
Physics	Paper 6/2	P5-7 or 8	Friday 14 <sup>th</sup> June 2024



# REVISION GUIDES

Purchase a science specific revision guide (from school shop - if you haven't already done so)

Comes with  
free online  
access

## Functions of the Blood

Blood is very useful stuff. It's a big transport system for moving things around the body. The **blood cells** do good work too. The **red blood cells** are responsible for transporting **oxygen** about, and they carry 100 times more than could be moved just dissolved in the plasma. And as for the white blood cells...

### Plasma is the Liquid Bit of Blood

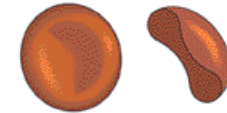
It's basically blood minus the blood cells (see below). Plasma is a pale yellow liquid which carries just about everything that needs transporting around your body:

- 1) **Red and white blood cells** (see below) and **platelets (used in clotting)**.
- 2) **Water**.
- 3) **Digested food products** like **glucose** and **amino acids** from the gut to all the body cells.
- 4) **Carbon dioxide** from the body cells to the lungs.
- 5) **Urea** from the liver to the kidneys (where it's removed in the urine).
- 6) **Hormones** — these act like chemical messengers.
- 7) **Antibodies** and **antitoxins** produced by the white blood cells (see below).

### Red Blood Cells Have the Job of Carrying Oxygen

They transport **oxygen** from the **lungs** to **all** the cells in the body. The **structure** of a red blood cell is adapted to its **function**:

- 1) Red blood cells are **small** and have a **biconcave shape** (which is a posh way of saying they look a little bit like doughnuts, see diagram below) to give a **large surface area** for **absorbing** and **releasing oxygen**.
- 2) They contain **haemoglobin**, which is what gives blood its **colour** — it contains a lot of **iron**. In the lungs, haemoglobin **reacts with oxygen** to become **oxyhaemoglobin**. In body tissues the reverse reaction happens to **release oxygen to the cells**.
- 3) Red blood cells don't have a **nucleus** — this frees up **space** for more haemoglobin, so they can carry more oxygen.



### White Blood Cells are Used to Fight Disease

They are used to fight disease.

to fight microbes.

to neutralise the toxins produced by microbes.

Basically the white blood cell wraps around the micro-organism and, and then it **digests it** using enzymes.

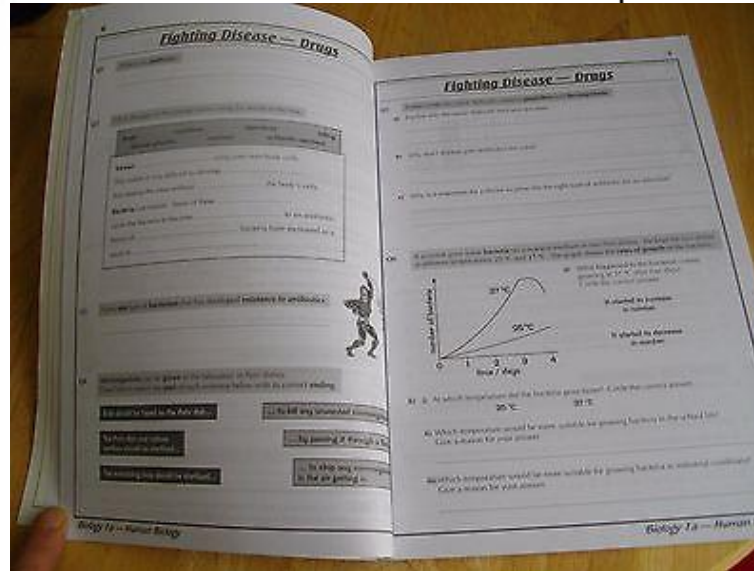


**Sweat and tears — kind of...** ...without the sweat... or the tears... just the blood then... yep... anyway... contains about **six and a half pints** of blood altogether, and every single drop there are usually about 500 times more red blood cells than white.

and Growing

# REVISION WORKBOOKS

Some students may benefit from using a dedicated science specific workbook (available with answer booklet from the school shop)



## Static Electricity

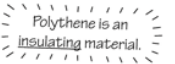
- Q1 Circle the pairs of charges that would attract each other and underline those that would repel.
- positive and positive    positive and negative    negative and positive    negative and negative

- Q2 Fill in the gaps in these sentences with the words below.

electrons	positive	static	insulating	negative
..... electricity can build up when two ..... materials are rubbed together. The ..... move from one material onto the other. This leaves a ..... charge on one of the materials and a ..... charge on the other.				

- Q3 The sentences below are wrong. Write out a **correct** version for each.

- a) An insulating rod becomes negatively charged when rubbed with a duster because it loses electrons.



..... and polythene rod will repel small pieces of paper if they are placed near it.

..... er two charged objects are together, the less strongly they attract or repel.

..... ively charged object is connected to earth by a metal strap, ..... flow through the strap from the object to the ground.

..... of static can cause sparks if the distance between the object and the earth is big enough.




# Google drive – revision materials

The screenshot displays a Google Drive web interface within a browser window. The browser's address bar shows the URL <https://drive.google.com/drive/folders/17k8dWGnkhRbjs82Fo7qwyV0vSN7Unorp>. The page header includes the BGLC Drive logo, a search bar, and a breadcrumb trail: **GCSE Science Revision > Combined Science (Trilogy) > Biology Paper 1 > B1 Cell Biology**. On the left, a sidebar lists navigation options: My Drive, Team Drives, Shared with me, Recent, Google Photos, Starred, and Bin, with a note indicating 5 GB of storage is used. The main content area, titled 'Files', displays a grid of document thumbnails. These include two PDFs titled 'B1 Cell Biology R...', a Word document 'B1 Complete You...', a document 'B1 low demand p...', a document 'B1 standard dem...', a Word document 'B1,B2 & B3 Past ...', and a presentation 'Biology-Revision-...'. The bottom of the image shows a Windows taskbar with the search bar and various application icons, and a system tray displaying the time as 17:02 on 06/01/2018.






← → ↻ Secure | https://ap

SENECA  
BETA

 **Biology: AQA  
GCSE Higher**

2 Organisation

- 2.1 Principles of Organism...
- 2.2 Enzymes
- 2.3 Circulatory System
  - 2.3.1 Blood Vessels
  - 2.3.2 Blood Vessels 2
  - 2.3.3 The Heart**
  - 2.3.4 Circulatory System & Gas Exchange
  - 2.3.5 Blood
  - 2.3.6 Blood Cells
- 2. Share Free Teacher CPD Cours

2.     

# YOUTUBE RECOMMENDED CHANNELS

## HELPFUL CHANNELS FOR REVISION TIPS OR SCIENCE TOPICS

Below are a list of recommended channels on YouTube that have videos that would be helpful in your Science revision:

### YouTubers recommended for Science topics and revision tips:

Revision with Eve  Revision With Eve  
10.1K subscribers

Primrose Kitten  Science and Maths by Primrose Kitten  
10.1K subscribers

Christopher Thornton  Christopher Thornton  
10.1K subscribers

### YouTubers recommended for Science topics:

My GCSE Science  myGCSEscience  
10.1K subscribers

Free Science Lessons  Free Science Lessons  
10.1K subscribers

### YouTubers recommended for Revision skills:

Study with Jess  Study With Jess  
10.1K subscribers

OR

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or recommended



# GCSE REQUIRED PRACTICALS

<https://www.youtube.com/c/MalmesburyEducation/playlists>

## GCSE Science Required Practicals



### GCSE Biology Required Practicals

Malmesbury Education

[VIEW FULL PLAYLIST](#)



### GCSE Physics Required Practicals

Malmesbury Education

[VIEW FULL PLAYLIST](#)



### GCSE Chemistry Practicals

Malmesbury Education

[VIEW FULL PLAYLIST](#)



### GCSE Science Required Practicals

Malmesbury Education

[VIEW FULL PLAYLIST](#)



# TASSOMAI

Online learning and revision platform

Multiple choice quizzes

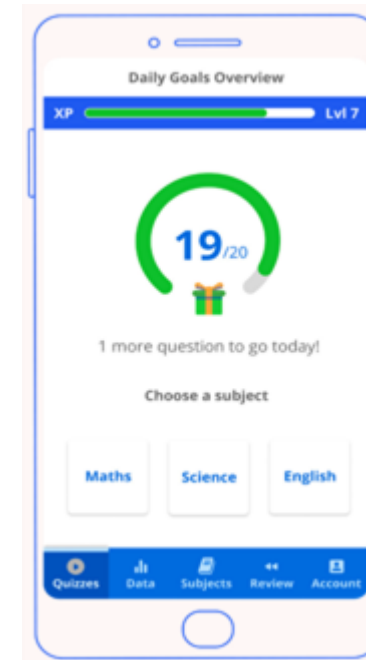
Daily goals: 3X per week Comb Sci  
4X for Sep Sci

Organises and spreads out learning

Personalises content

Builds knowledge

Generate a virtual tree to represent learning



# REVISION IN SCHOOL

Most classes will finish formal teaching of content by mid march

Preparation formal assessments

Revision in class:

Recap-teaching of difficult topics

Focussed exam question prep

Independent study

**NO HEADPHONES WILL BE ALLOWED**

❑ Ask your teacher for help!!!

AQA

SPECIMEN MATERIAL

GCSE  
COMBINED SCIENCE: TRILOGY

H

Higher Tier Paper 1: Biology 1H

Specimen 2018

Time allowed: 1 hour 15 minutes

**Materials**

For this paper you must have:

- a ruler
- a calculator.

**Instructions**

- Answer all questions in the spaces provided.
- Do all rough work in this book. Cross through any work you do not want to be marked.

**Information**

- There are 70 marks available on this paper.
- 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.
- When answering questions 02.2, 05.3 and 06.6 you need to make sure that your answer:
  - is clear, logical, sensibly structured
  - fully meets the requirements of the question
  - shows that each separate point or step supports the overall answer.

**Advice**

- In all calculations, show clearly how you work out your answer.

Please write clearly, in block capitals.

Centre number  Candidate number

Surname

Forename(s)

Candidate signature



For this year only the physics equations are provided for the physics exams

A periodic table is provided for the chemistry exams

# The Periodic Table of the Elements

1
2
3
4
5
6
7
8

1  
H  
hydrogen  
1

4  
He  
helium  
2

7  
Li  
lithium  
3

9  
Be  
beryllium  
4

23  
Na  
sodium  
11

24  
Mg  
magnesium  
12

39  
K  
potassium  
19

40  
Ca  
calcium  
20

45  
Sc  
scandium  
21

48  
Ti  
titanium  
22

51  
V  
vanadium  
23

52  
Cr  
chromium  
24

55  
Mn  
manganese  
25

56  
Fe  
iron  
26

59  
Co  
cobalt  
27

59  
Ni  
nickel  
28

63.5  
Cu  
copper  
29

65  
Zn  
zinc  
30

70  
Ga  
gallium  
31

73  
Ge  
germanium  
32

75  
As  
arsenic  
33

79  
Se  
selenium  
34

80  
Br  
bromine  
35

84  
Kr  
krypton  
36

85  
Rb  
rubidium  
37

88  
Sr  
strontium  
38

89  
Y  
yttrium  
39

91  
Zr  
zirconium  
40

93  
Nb  
niobium  
41

96  
Mo  
molybdenum  
42

98  
Tc  
technetium  
43

101  
Ru  
ruthenium  
44

103  
Rh  
rhodium  
45

106  
Pd  
palladium  
46

108  
Ag  
silver  
47

112  
Cd  
cadmium  
48

115  
In  
indium  
49

119  
Sn  
tin  
50

122  
Sb  
antimony  
51

128  
Te  
tellurium  
52

127  
I  
iodine  
53

131  
Xe  
xenon  
54

133  
Cs  
cesium  
55

137  
Ba  
barium  
56

139  
La\*  
lanthanum  
57

178  
Hf  
hafnium  
72

181  
Ta  
tantalum  
73

184  
W  
tungsten  
74

186  
Re  
rhenium  
75

190  
Os  
osmium  
76

192  
Ir  
iridium  
77

195  
Pt  
platinum  
78

197  
Au  
gold  
79

201  
Hg  
mercury  
80

204  
Tl  
thallium  
81

207  
Pb  
lead  
82

209  
Bi  
bismuth  
83

[209]  
Po  
polonium  
84

[210]  
At  
astatine  
85

[222]  
Rn  
radon  
86

[223]  
Fr  
francium  
87

[226]  
Ra  
radium  
88

[227]  
Ac\*  
actinium  
89

[261]  
Rf  
rutherfordium  
104

[262]  
Db  
dubnium  
105

[266]  
Sg  
seaborgium  
106

[264]  
Bh  
bohrium  
107

[277]  
Hs  
hassium  
108

[268]  
Mt  
meitnerium  
109

[271]  
Ds  
darmstadtium  
110

[272]  
Rg  
roentgenium  
111

Elements with atomic numbers 112-116 have been reported but not fully authenticated

\* The lanthanoids (atomic numbers 58-71) and the actinoids (atomic numbers 90-103) have been omitted.

The relative atomic masses of copper and chlorine have not been rounded to the nearest whole number.

**Physics Equations Sheet**  
GCSE Combined Science: Trilogy (8464)  
and GCSE Combined Science: Synergy  
(8465)

FOR USE IN JUNE 2022 ONLY

HT = Higher Tier only equations

kinetic energy = $0.5 \times \text{mass} \times (\text{speed})^2$	$E_k = \frac{1}{2} m v^2$
elastic potential energy = $0.5 \times \text{spring constant} \times (\text{extension})^2$	$E_e = \frac{1}{2} k e^2$
gravitational potential energy = mass $\times$ gravitational field strength $\times$ height	$E_p = m g h$
change in thermal energy = mass $\times$ specific heat capacity $\times$ temperature change	$\Delta E = m c \Delta \theta$
power = $\frac{\text{energy transferred}}{\text{time}}$	$P = \frac{E}{t}$
power = $\frac{\text{work done}}{\text{time}}$	$P = \frac{W}{t}$
efficiency = $\frac{\text{useful output energy transfer}}{\text{total input energy transfer}}$	
efficiency = $\frac{\text{useful power output}}{\text{total power input}}$	
charge flow = current $\times$ time	$Q = I t$
potential difference = current $\times$ resistance	$V = I R$
power = potential difference $\times$ current	$P = V I$
power = (current) $^2 \times$ resistance	$P = I^2 R$
energy transferred = power $\times$ time	$E = P t$

Physics Equations Sheet –  
GCSE Combined Science: Trilogy (34M) and GCSE Combined Science: Synergy (34S)  
FOR USE IN JUNE 2023 ONLY

Turn over ►

# EXAM TIPS

Rough guide is 1 mark per minute!

Have a go, if in doubt put something it down (no answer = no mark)

9 Enzymes have many industrial uses.

(a) Draw straight lines to join each **enzyme** with the correct **use of the enzyme**.

Draw only **three** lines.

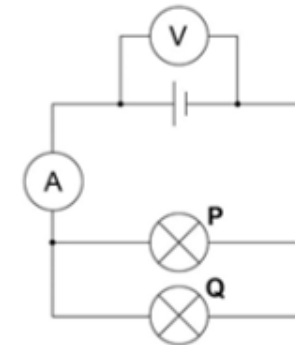
Enzyme	Use of the enzyme
<input type="text" value="sucrase"/>	<input type="text" value="used in the production of milk for people with intolerance to dairy products"/>
<input type="text" value="lactase"/>	<input type="text" value="used on reagent strips to detect lactose"/>
<input type="text" value="ligase"/>	<input type="text" value="used to join strands of DNA together"/>
	<input type="text" value="used to produce sweeter sugars for food"/>

0 1

Figure 1 shows a circuit diagram containing two identical lamps arranged in parallel.

The reading on the ammeter is 186 mA.

Figure 1



0 1 . 1

Which statement about the current through the lamps is true?

[1 mark]

Tick **one** box.

The current through both lamp P and lamp Q is **0.093 A**

☐

The current through both lamp P and lamp Q is **0.186 A**

☐

The current through both lamp P and lamp Q is **0.93 A**

☐

The current through both lamp P and lamp Q is **1.86 A**

☐

# LONGER ANSWER QUESTIONS

Don't be daunted by the 4 - 6 mark questions.

Read the stem of the question, it often has vital information.

Read the command words carefully – describe, explain, compare, evaluate

If data- table/graph is given, use it!

It is OK to bullet point your answer.

Read through what you have written!!!

Dare to have a go!

3 Look at the picture of a firefly.

The firefly is able to give out flashes of bright light to attract a mate.

Just after dark is the best time to see fireflies flashing light.

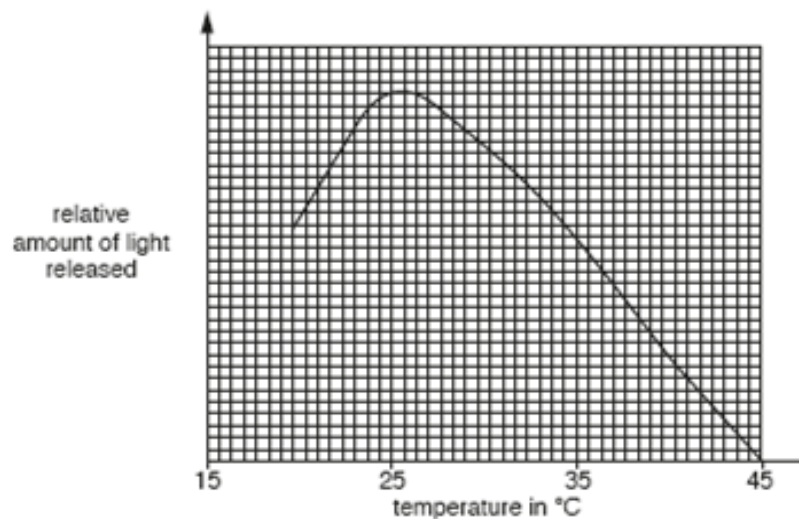


The reaction that releases the light involves the breakdown of a chemical.

An enzyme called luciferase is needed for this reaction.

Look at the graph.

It shows how temperature affects the reaction that releases light.



9

(a) Use data from the graph to **explain** the effect of temperature on luciferase and explain why it is **only** luciferase enzyme that will catalyse this reaction.

# If data is given, use it!

[6]

[6]



**0 5** . **3** In coronary heart disease (CHD) layers of fatty material build up inside the coronary arteries. This can cause a heart attack.

Statins and stents can be used to reduce the risk of a heart attack in people with CHD.

Evaluate the use of statins and stents in people with CHD.

Remember to include a justified conclusion.

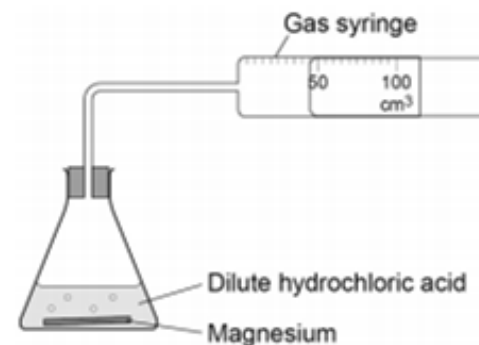
[6 marks]

Evaluation – remember to  
give balanced arguments  
and a **conclusion**

**0 3**

A student investigated the rate of the reaction between magnesium and dilute hydrochloric acid.  
The student used the apparatus shown in **Figure 4** to collect the gas produced.

**Figure 4**



**0 3** . **1**

Outline a plan to investigate how the rate of this reaction changed when the concentration of the hydrochloric acid was changed.

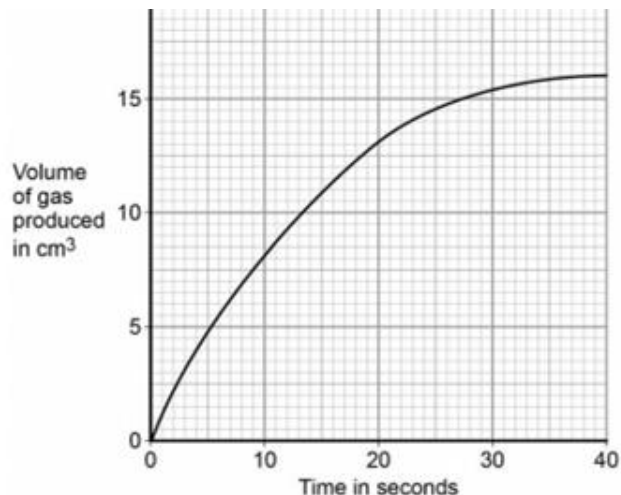
- Describe how you would do the investigation and the measurements you would make.
- Describe how you would make it a fair test.

You do **not** need to write about safety precautions.

[6 marks]

15% of GCSE marks in exams come  
from questions relating to practicals.

# DATA ANALYSIS AND EVALUATION



If data is  
given, use it!



Draw a tangent to the curve at 20 seconds.

Determine the rate of the reaction at 20 seconds by calculating the gradient of the tangent.

Give the unit.

[4 marks]

---

---

---

---

---

---

Rate of reaction = \_\_\_\_\_

Unit = \_\_\_\_\_

**0 2 . 5** A driver wishes to buy a new car.

**Table 1** gives some data about an electric car and one with a petrol engine.

**Table 1**

	Electric car	Petrol engine car
<b>Cost (£)</b>	27 000	15 000
<b>Running cost per year (£)</b>	250	2 000
<b>Average lifetime (years)</b>	12	12

Which car would be the most economic over its 12 year lifetime?

Use data from **Table 1** to support your answer.

You should include the difference in cost in your answer.

[4 marks]

# The exam paper

2

0 1

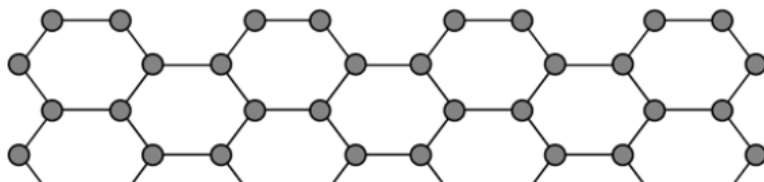
This question is about structure and bonding.

0 1

. 1

**Figure 1** shows part of one layer of graphene.

**Figure 1**



*Do not write  
outside the  
box*

Do not write  
outside the box,  
exam papers are  
scanned and  
therefore any  
writing outside of  
the box may be  
missed and will not  
get marked

# AQA - INSIGHT FROM THE LAST PREVIOUS EXAMS

Prepare for unfamiliar contexts

**GCSE biology students are sharing their horror at a tough, carrot-based question**

These students are numbing the pain of a difficult exam with hilarious Tweets.



Biology students weren't expecting a question about carrots in their GCSE exam



# AQA - INSIGHT FROM PREVIOUS EXAMS

Prepare for unfamiliar contexts

Read the question carefully to ensure you know what is being asked, understand the command words

Don't waste space repeating the question

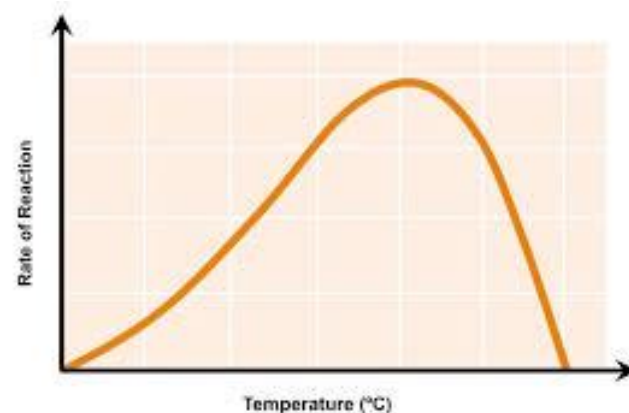
Read through your work to check for errors

Be specific in your responses don't use 'it' or 'they'

Make sure you understand why each step in the practical is important

Maths - Show your working out in maths questions

- Check for significant figures
- Don't round answers until you reach the final answer



# General tips

**Plan** revision – small chunks

Take a break – do something active

Revise in a calm environment..... remove distractions

Controlled access to electronic devices

Sleep!

Breakfast before exams!

Right equipment on the day:

- Black pen (and spare)
- Pencil, ruler and rubber for graphs
- Calculator!



GOOD LUCK  
in your  
EXAMS!

You'll be AMAZING,  
I asked around -  
We all agreed!

