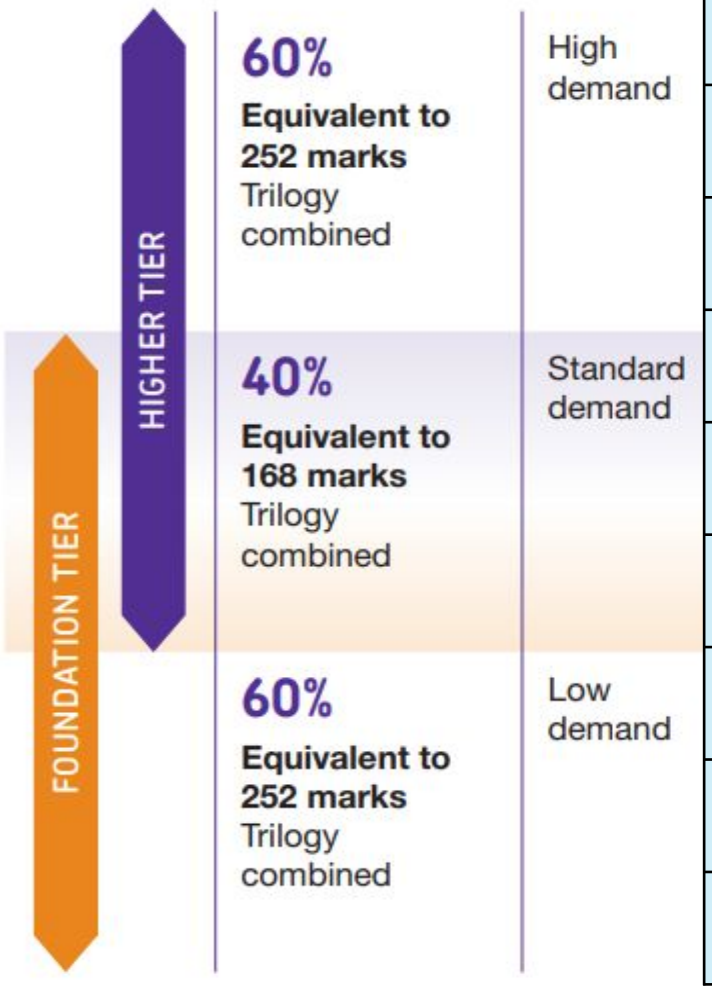
SCIENCE

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



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

GCSE grades Separate Science

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.

Combined Science	Separate Science
1 hour 15 minutes	1 hour 45 minutes
Double award	3 separate GCSEs
2 GCSEs	Biology, Chemistry, Physics

EXAM DATES

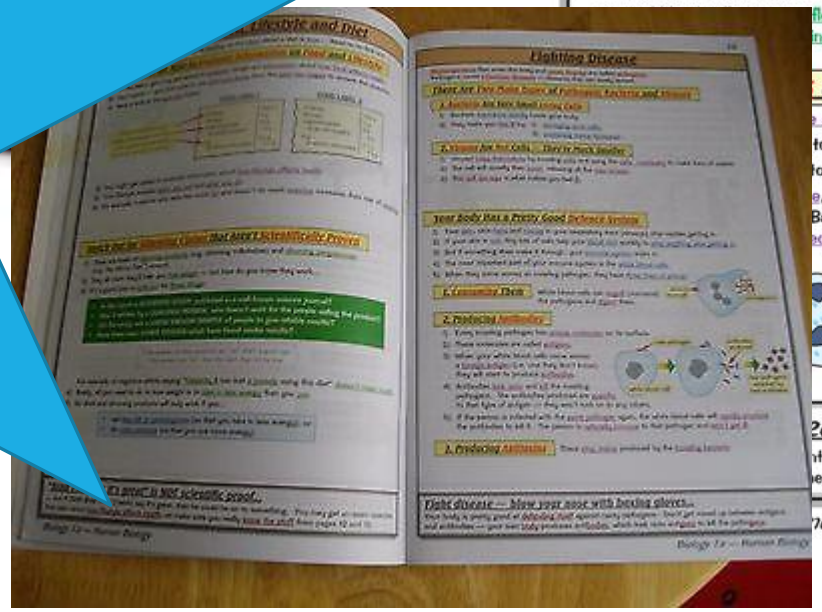
Combined Science and Triple Science

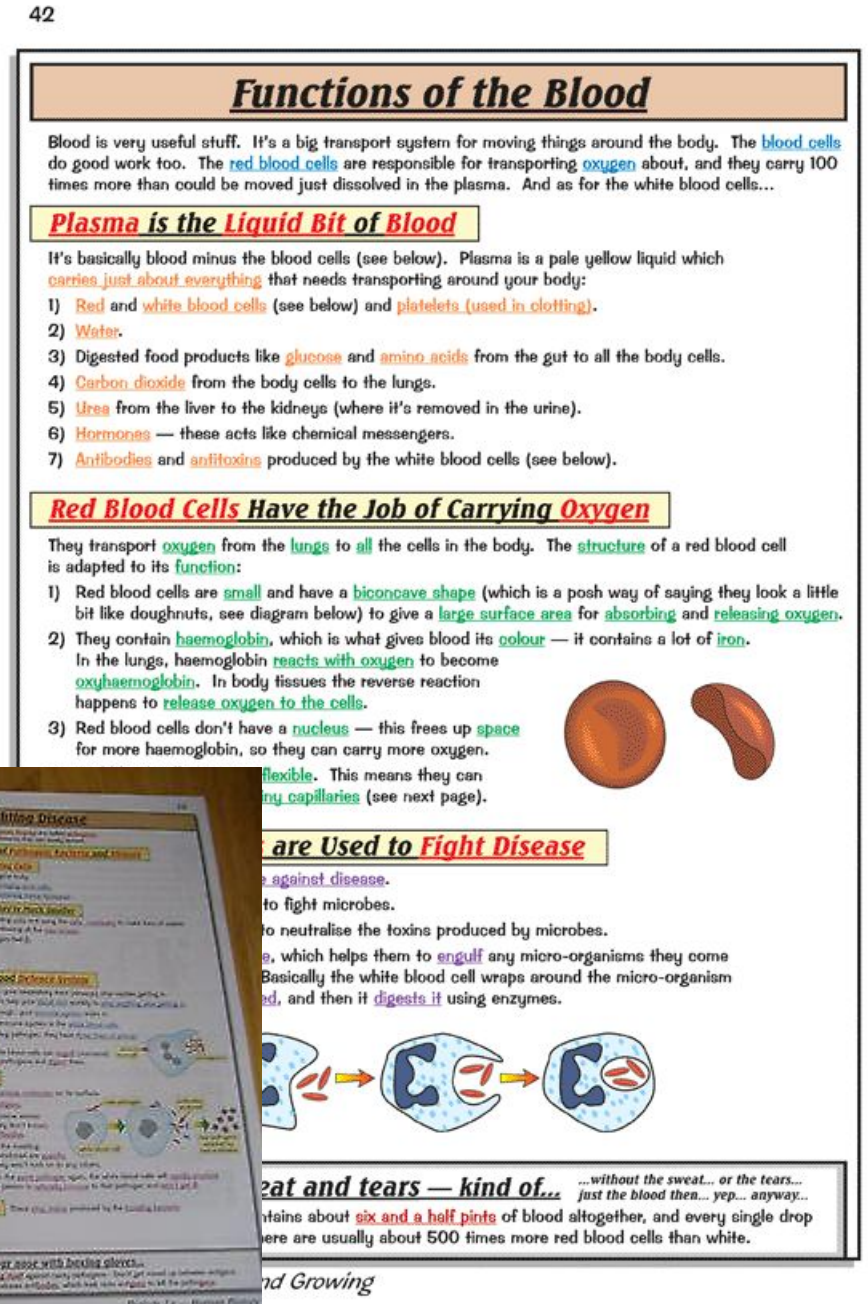
Biology	Paper 1/1	B1-4	Tuesday 16th May 2023
Chemistry	Paper 2/1	C1-5	Monday 22nd May 2023
Physics	Paper 3/1	P1-4	Thursday 25th May 2023
Biology	Paper 4/2	B5-7	Friday 9th June 2023
Chemistry	Paper 5/2	C6-10	Tuesday 13th June 2023
Physics	Paper 6/2	P5-7 or 8	Friday 16th June 2023

REVISION GUIDES

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

Comes with free online access





42

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 acts 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.

flexible. This means they can
ny capillaries (see next page).

are Used to Fight Disease

against disease.
to fight microbes.
o neutralise the toxins produced by microbes.
, which helps them to engulf any micro-organisms they come
Basically the white blood cell wraps around the micro-organism
d, and then it digests it using enzymes.

eat and tears — kind of...

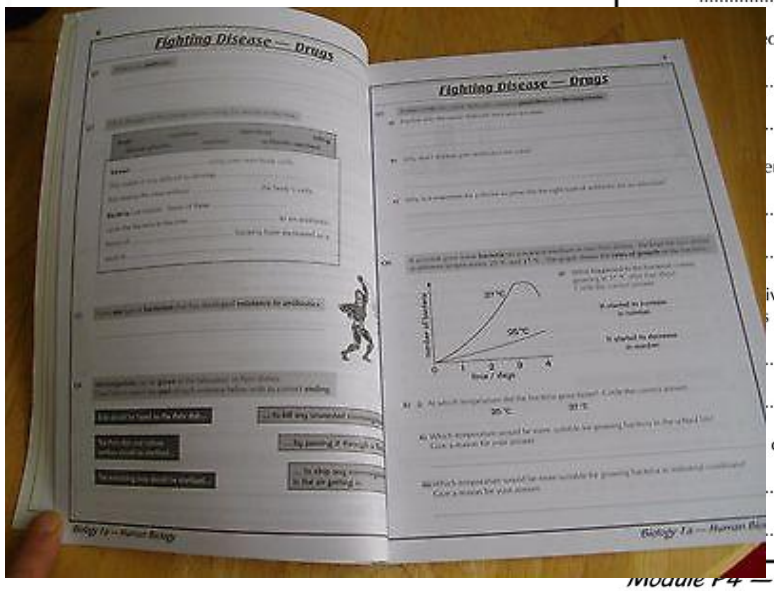
...without the sweat... or the tears... just the blood then... yep... anyway...

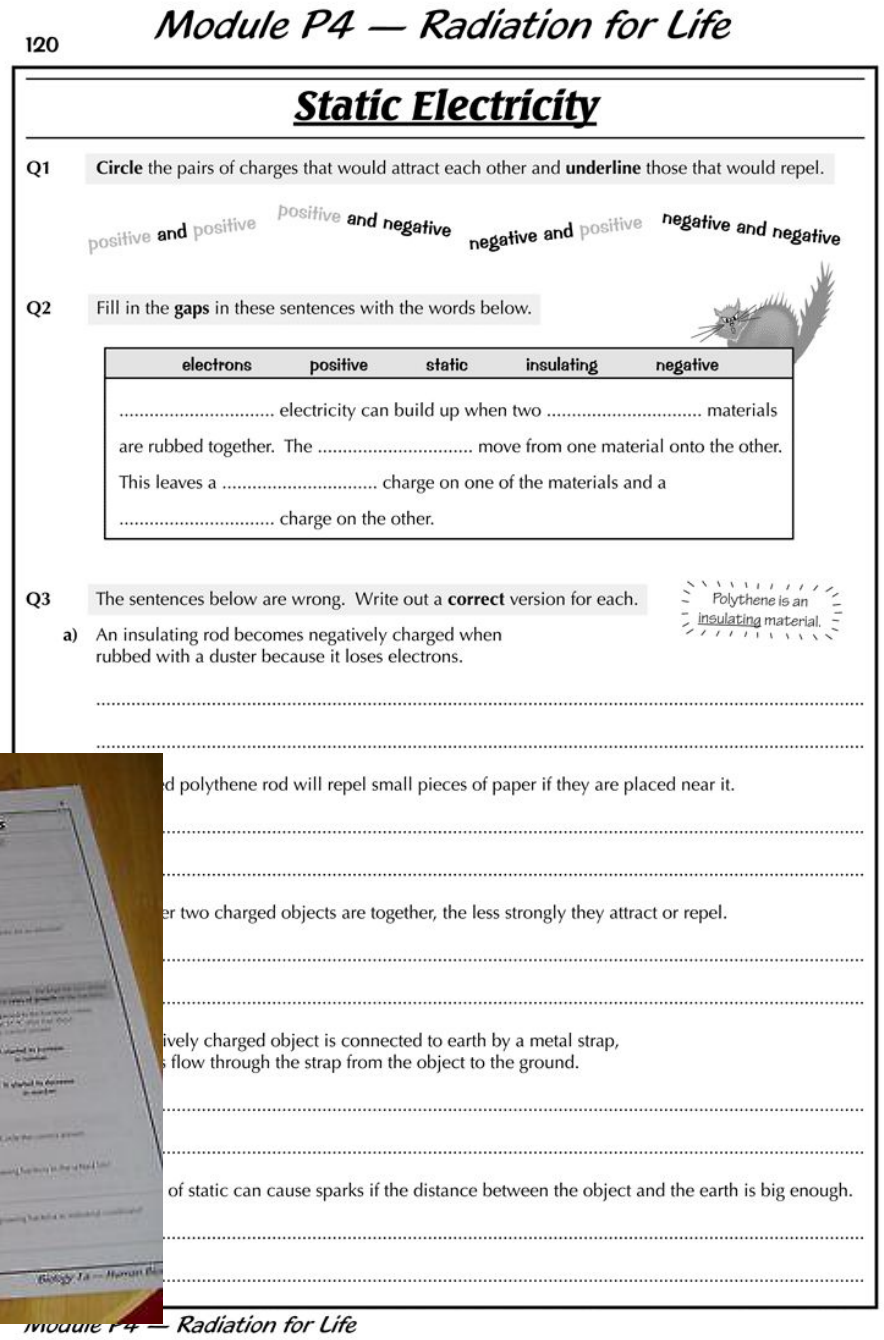
tains about six and a half pints of blood altogether, and every single drop
ere are usually about 500 times more red blood cells than white.

nd Growing

REVISION WORKBOOKS

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





120 Module P4 — Radiation for Life

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.

Polythene is an insulating material.

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

.....

.....

d 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.

.....

.....

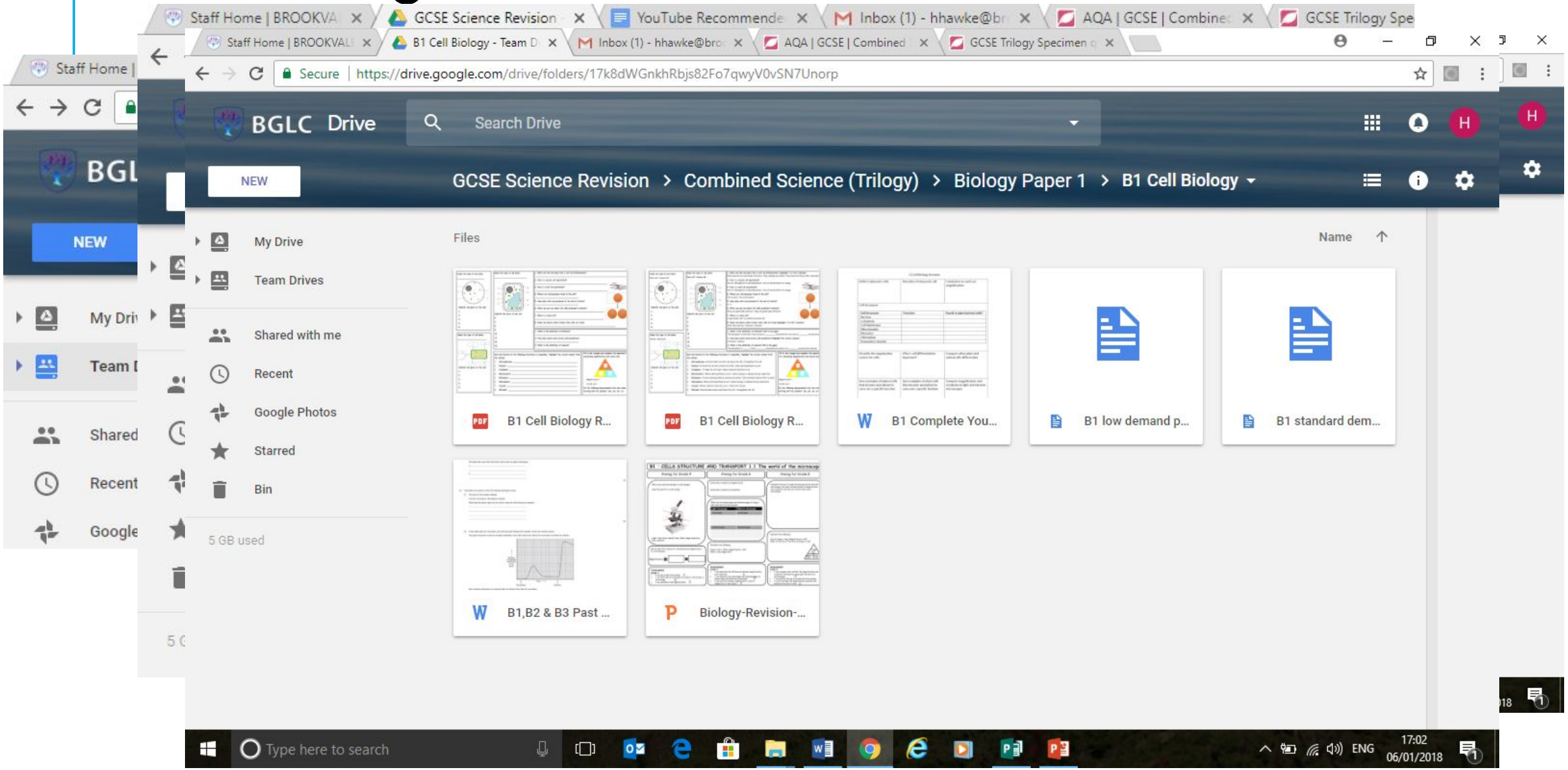
of static can cause sparks if the distance between the object and the earth is big enough.

.....

.....

Module P4 — Radiation for Life

Google drive – revision materials



TASSOMAI

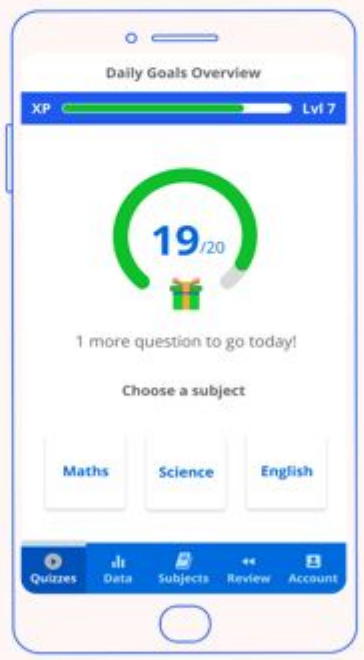
Online learning and revision platform
Multiple choice quizzes
Daily goals: 3X per week Comb Sci
4X for Sep Sci
Organises and spreads out learning
Personalises content
Builds knowledge
Generate a virtual tree to represent learning

TASSOMAI

The scientific way to study

Welcome to Tassomai

(pronounced Tass-oh-my)



https://www.youtube.com/watch?v=WgdLrPUec1k

Secure | https://ap

SENECA BETA

Biology: AQA GCSE Higher

- 2 Organisation
  - 2.1 Principles of Organis...
  - 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

Primrose Kitten

Christopher Thornton

YouTubers recommended for Science topics:

My GCSE Science

Free Science Lessons

YouTubers recommended for Revision skills:

Study with Jess

OR

UNI ADMISSIONS

pumps

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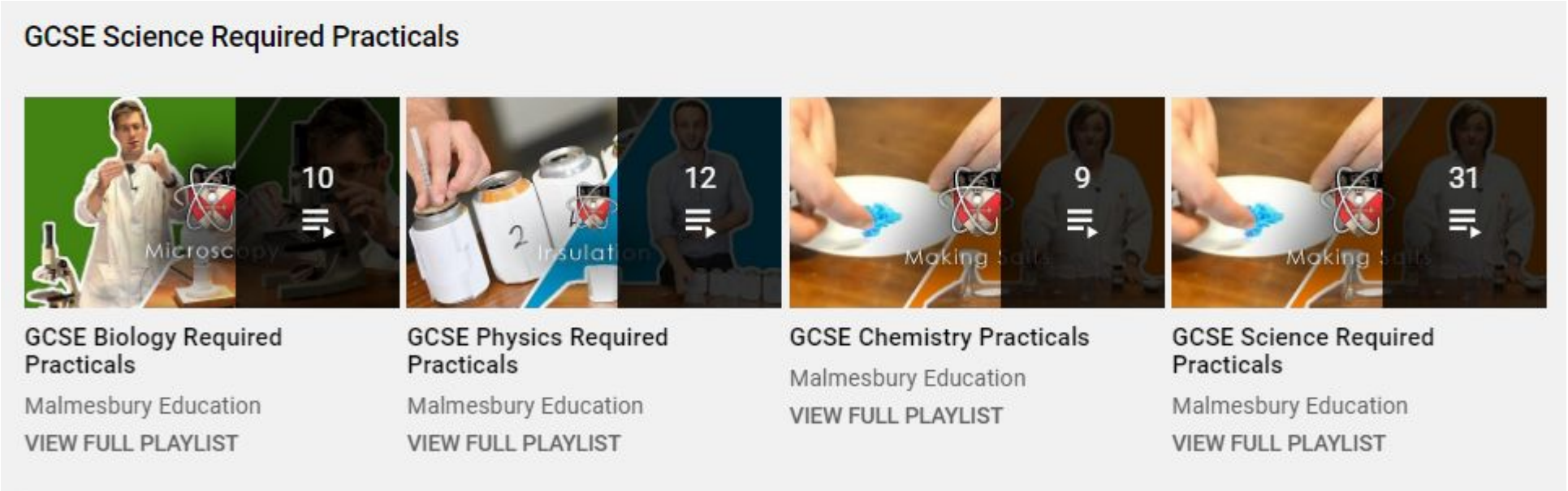
er recommended

GCSE REQUIRED PRACTICALS

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



YEAR 11 SCIENCE REVISION GOOGLE CLASSROOM

As well as resources in each classes google classroom Mr Dixey has invited all students to the year 11 science revision google classroom, please encourage your child to participate.

Questions will be posted on various topic weekly (answers the following week)

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

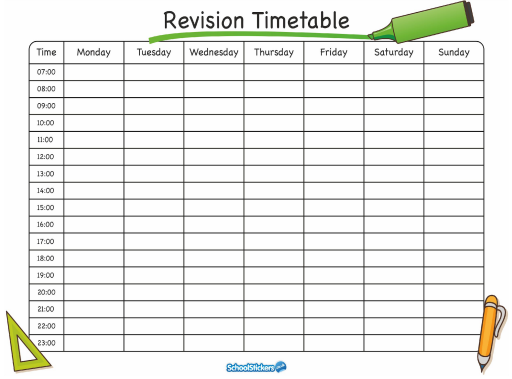
Focussed exam question prep

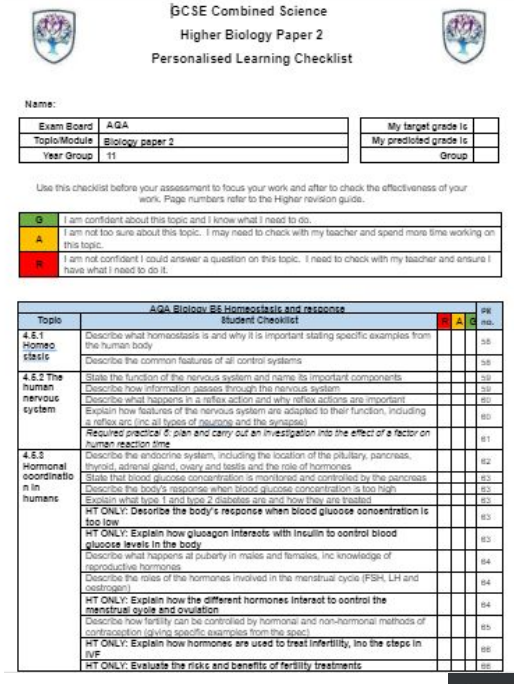
Independent study

NO HEADPHONES WILL BE ALLOWED

PLAN AHEAD

- ❑ Revision timetable
- ❑ PLCs to understand the areas of weakness
- ❑ Make mind maps for each topic or use the ones on the google drive
- ❑ Make revision cards with key ideas
- ❑ Practice past paper questions
- ❑ Ask your teacher for help!!!





GCSE Combined Science
Higher Biology Paper 2
Personalised Learning Checklist

Name:

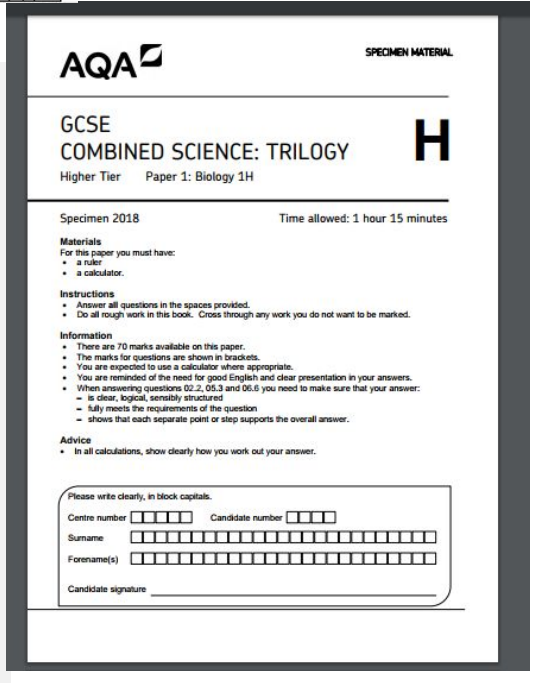
Exam Board	AQA	My target grade is	
Topic/Module	Biology paper 2	My predicted grade is	
Year Group	11	Group	

Use this checklist before your assessment to focus your work and after to check the effectiveness of your work. Page numbers refer to the Higher revision guide.

G	I am confident about this topic and I know what I need to do.
A	I am not too sure about this topic. I may need to check with my teacher and spend more time working on this topic.
R	I am not confident I could answer a question on this topic. I need to check with my teacher and ensure I have what I need to do it.

AQA Biology B6 Homeostasis and response

Topic	Student Checklist	R	A	G	PM no.
4.6.1 Homeostasis	Describe what homeostasis is and why it is important stating specific examples from the human body				58
	Describe the common features of all control systems				58
4.6.2 The human nervous system	State the function of the nervous system and name its important components				59
	Describe how information passes through the nervous system				59
	Describe what happens in a reflex action and why reflex actions are important				60
	Explain how features of the nervous system are adapted to their function, including a reflex arc (inc all types of neurons and the synapse)				60
	Required practical 6: plan and carry out an investigation into the effect of a factor on human reaction time				61
4.6.3 Hormonal coordination in humans	Describe the endocrine system, including the location of the pituitary, pancreas, thyroid, adrenal gland, ovary and testis and the role of hormones				62
	State that blood glucose concentration is monitored and controlled by the pancreas				63
	Describe the body's response when blood glucose concentration is too high				63
	Explain what type 1 and type 2 diabetes are and how they are treated				63
	HT ONLY: Describe the body's response when blood glucose concentration is too low				63
	HT ONLY: Explain how glucagon interacts with insulin to control blood glucose levels in the body				63
	Describe what happens at puberty in males and females, inc knowledge of reproductive hormones				64
	Describe the roles of the hormones involved in the menstrual cycle (FSH, LH and oestrogen)				64
	HT ONLY: Explain how the different hormones interact to control the menstrual cycle and ovulation				64
	Describe how fertility can be controlled by hormonal and non-hormonal methods of contraception (giving specific examples from the spec)				65
	HT ONLY: Explain how hormones are used to treat infertility, inc the steps in IVF				66
	HT ONLY: Evaluate the risks and benefits of fertility treatments				66



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

EXAM TIP

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

Key

relative atomic mass
atomic symbol
atomic (proton) number

1	2											3	4	5	6	7	0
1 H hydrogen 1																	4 He helium 2
7 Li lithium 3	9 Be beryllium 4											11 B boron 5	12 C carbon 6	14 N nitrogen 7	16 O oxygen 8	19 F fluorine 9	20 Ne neon 10
23 Na sodium 11	24 Mg magnesium 12											27 Al aluminium 13	28 Si silicon 14	31 P phosphorus 15	32 S sulfur 16	35.5 Cl chlorine 17	40 Ar argon 18
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 caesium 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.

AQA

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 × mass × (speed)^2	$E_k = \frac{1}{2} m v^2$
elastic potential energy = 0.5 × spring constant × (extension)^2	$E_e = \frac{1}{2} k e^2$
gravitational potential energy = mass × gravitational field strength × height	$E_p = m g h$
change in thermal energy = mass × specific heat capacity × 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 × time	$Q = I t$
potential difference = current × resistance	$V = I R$
power = potential difference × current	$P = V I$
power = (current)^2 × resistance	$P = I^2 R$
energy transferred = power × time	$E = P t$

Physics Equations Sheet –
GCSE Combined Science: Trilogy (8464) and GCSE Combined Science: Synergy (8465)
FOR USE IN JUNE 2022 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.

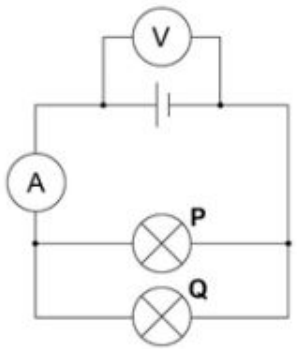
Enzyme	Use of the enzyme
	used in the production of milk for people with intolerance to dairy products
sucrase	
	used on reagent strips to detect lactose
lactase	
	used to join strands of DNA together
ligase	
	used to produce sweeter sugars for food

[2]

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.

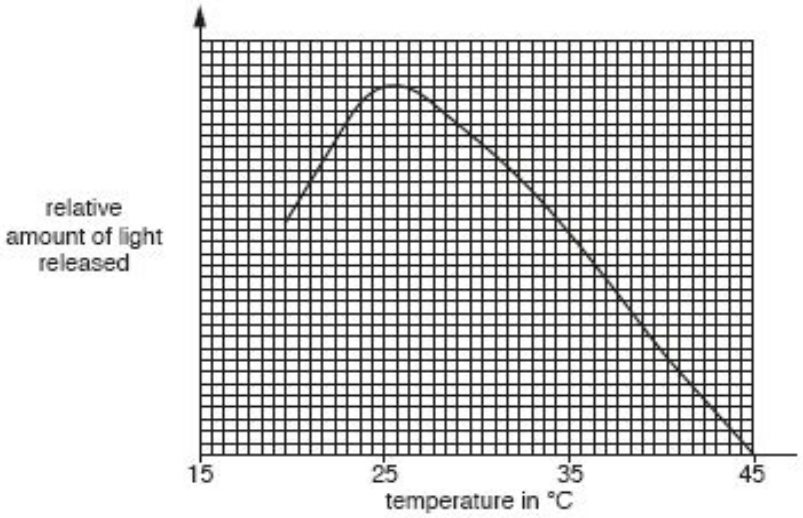
Just after dark is the best time to see fireflies flashing light.

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.



(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]

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.

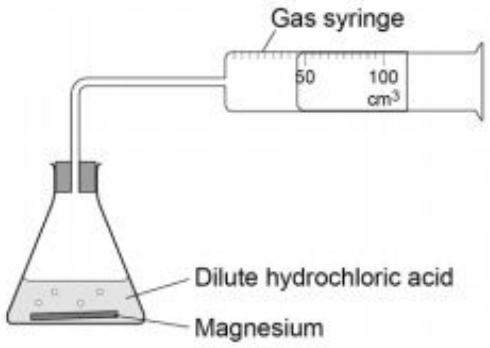
Remember to include a justified conclusion.

[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.

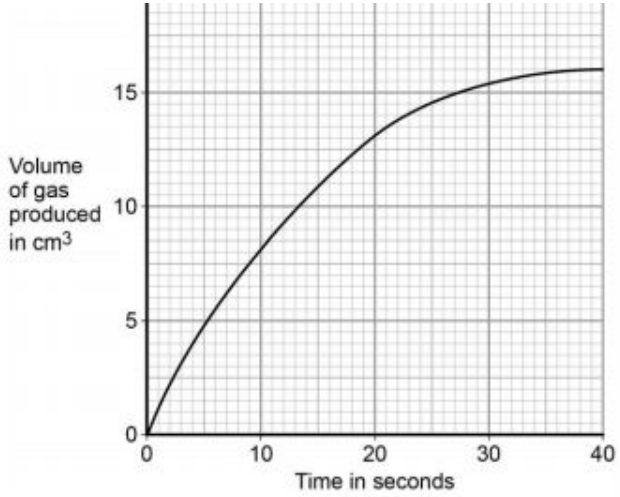
- Describe how you would do the investigation and the measurements you would make.
- Describe how you would make it a fair test.

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



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 = _____

If data is given, use it!

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
Cost (£)	27 000	15 000
Running cost per year (£)	250	2 000
Average lifetime (years)	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]

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 THE LAST PREVIOUS EXAMS

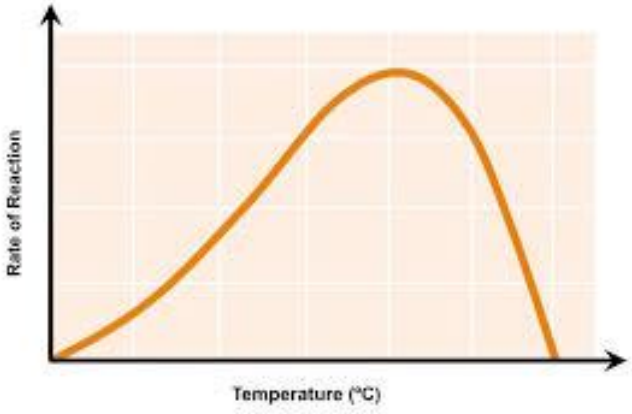
Prepare for unfamiliar contexts

Read the question carefully too 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

WHAT YOU CAN DO AS A PARENT – GET INVOLVED!

Help them **plan** their revision – small chunks

Question them using the revision guides

Mark the papers for them, the answers are available on exam board websites

Provide a calm environment…….. remove distractions

Breakfast before exams!

Right equipment on the day…….. Calculator!

Sleep!

Any questions please ask

Good luck

in your Assessments

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