

Supporting your child to succeed in GCSE Science

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Meridian Trust Director of Science



Learning outcomes

- What course is my child studying?
- What are the Science exams like?
- Top tips for answering specific questions
- What equipment does my child need to succeed?
- What resources are available to support my child?



What course is my child studying?

AQA Exam Board

Combined Science (Trilogy)

- Worth 2 GCSE's
- 6 papers, 1 hr 15mins each
 - 2 Biology
 - 2 Chemistry
 - 2 Physics

Separate Science

- Worth 3 GCSE's
- 6 papers, 1 hr 45min each
 - 2 Biology
 - 2 Chemistry
 - 2 Physics

<https://www.aqa.org.uk/subjects/science/gcse>



What course is my child studying?

Biology Paper 1

1. Cell Biology
2. Organisation (Cells, Tissues and Organs)
3. Infection and Immunity
Defence Systems
4. Bioenergetics

Biology Paper 2

5. Homeostasis and Response
6. Reproduction
7. Development
8. Ecology

Plus required practical's!

Chemistry Paper 1

1. Atomic Structure
2. Bonding, Structure and Properties
Ionic and Metallic
3. Quantitative Chemistry (Moles and Mass)
4. Chemical Changes (Metals, Salts, Acids and Electrolysis)
5. Energy Changes (Exothermic and Endothermic)

Chemistry Paper 2

6. Organic Chemistry (Alkanes and Alkenes)
7. Inorganic Chemistry (Transition Metals)
8. Chemical Analysis
9. Chemistry of the Atmosphere
10. Earth's Resources

40% of Science GCSE's are based on retrieval of knowledge (A01)

Physics Paper 1

1. Energy
2. Electricity
3. Particle Model of Matter (Density and Changes of State)
4. Atomic Structure (Atoms and Nuclear Radiation)

Physics Paper 2

5. Forces
6. Waves
7. Magnetism and Electromagnetism
8. Space (Sep Science only)



What are the Science exams like?

AO1: Demonstrate knowledge and understanding of: scientific ideas; scientific techniques and procedures. (40%)

AO2: Apply knowledge and understanding of: scientific ideas; scientific enquiry, techniques and procedures.
(40%)

AO3: Analyse information and ideas to: interpret and evaluate; make judgments and draw conclusions; develop and improve experimental procedures. (20%)



Top tips for answering specific questions

- All of our students will be sitting 6 written science exams.
- Each paper contains completely different content.
- Each will consist of different types of questions up to 6 marks:

➤ Multiple choice

➤ Tick box

➤ Sentence completion

➤ Short answer

➤ Calculations

➤ Labelling and drawing diagrams

➤ Drawing/interpreting graphs

➤ Extended response

What type of compound is calcium oxide?

Tick **one** box.

An acid

☐

A base

☐

A carbonate

☐

A salt

☐

[1 mark]



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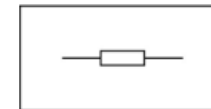
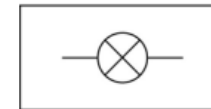
➤ Drawing/interpreting graphs

➤ Extended response

0 6 . 2 Draw **one** line from each symbol to the name of the component.

[3 marks]

Standard symbol



Name of component

Battery

Lamp

LED

Resistor

Switch



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0 5 . 3

More forest was lost in 2012 than in 2009.

Use words from the box to complete the sentences.

[2 marks]

carbon dioxide	excretion	nitrogen
oxygen	photosynthesis	respiration

The increase in the area of forest lost has caused an increase in the gas _____

The increase of this gas has been caused because less _____ absorbed by plants for the process of _____



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0 2 . 6 Describe how this fuel is different from crude oil.

[2 marks]



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06.4

A volume of $2.5 \times 10^{-5} \text{ m}^3$ of condensation forms on the mirror.

Density of water = 1000 kg/m^3

Specific latent heat of vaporisation of water = $2.26 \times 10^6 \text{ J/kg}$.

Calculate the energy released when the condensation forms.

[5 marks]

Energy released = _____ J



Walk thru- calculations (1)

0 5 . 4

When the heater is supplied with 120 J of energy each second, the internal energy of the ice increases by 45 J each second.

Use the following equation to calculate the efficiency of the heater.

$$\text{efficiency} = \frac{\text{output energy transfer}}{\text{input energy transfer}}$$

Give your answer to two decimal places

[2 marks]

$$\text{Efficiency} = \frac{\text{output energy transfer}}{\text{Input energy transfer}} = \frac{45}{120} = 0.375$$

$$\text{Efficiency} = 0.38$$



Walk thru- calculations (2)

0 6 . 4 A volume of $2.5 \times 10^{-5} \text{ m}^3$ of condensation forms on the mirror.

Density of water = 1000 kg/m^3

Specific latent heat of vaporisation of water = $2.26 \times 10^6 \text{ J/kg}$.

Calculate the energy released when the condensation forms.

[5 marks]

$$\text{Energy} = \text{mass} \times \text{specific latent heat}$$
$$\text{Density} = \frac{\text{Mass}}{\text{volume}}$$

$$\text{Density} = \frac{\text{Mass}}{\text{volume}} \quad 1000 = \frac{\text{Mass}}{2.5 \times 10^{-5}}$$
$$\text{Mass} = 2.25 \times 10^{-5} \times 1000$$
$$\text{Mass} = 0.025 \text{ kg}$$

$$\text{Energy} = \text{mass} \times \text{specific latent heat}$$

$$\text{Energy} = 0.025 \times 2.26 \times 10^6$$

$$\text{Energy} = 56,500 \text{ J}$$

$$\text{Energy released} = 56,500 \text{ J}$$



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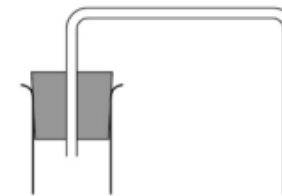
10 . **3** Some countries make drinking water from seawater.

Complete **Figure 11** to show how you can distil salt solution to produce and collect pure water.

Label the following:

- pure water
- salt solution.

Figure 11



Top tips for answering specific questions

- All of our students will be sitting 6 written science exams.

- Each paper contains completely different content

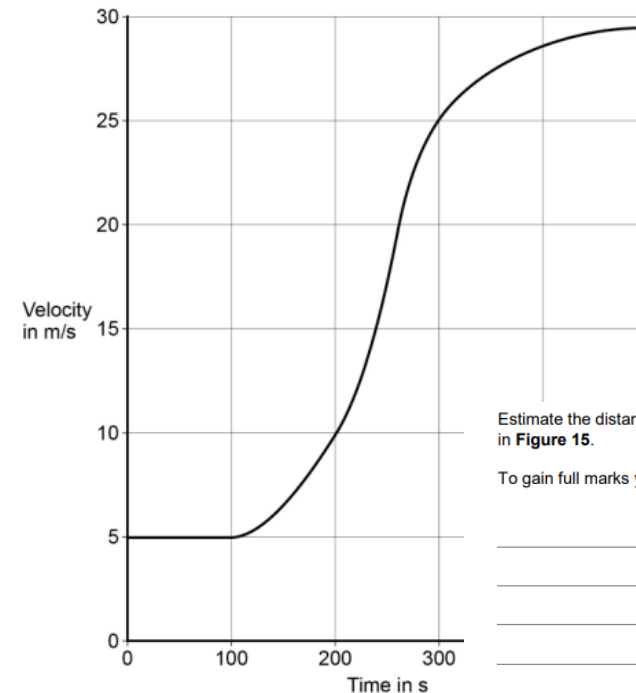
0 8 . 4 Figure 15 shows how the velocity of the train changes with time as the train travels along a straight section of the journey.

- Each will consist of different types of

- Multiple choice
- Link box
- Sentence completion
- Short answer
- Calculations
- Labelling and drawing diagrams
- Drawing/interpreting graphs

- Extended response

Figure 15



Estimate the distance travelled by the train in Figure 15.

To gain full marks you must show

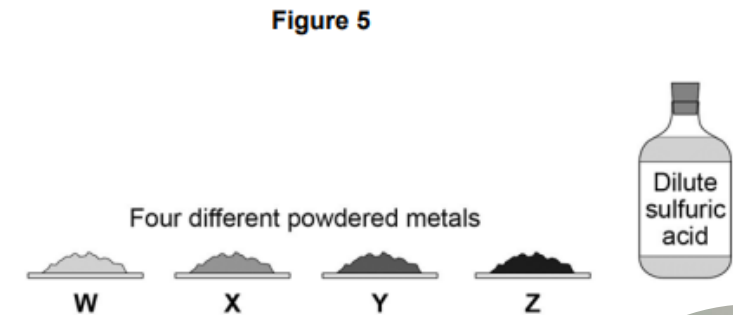


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- Extended response

Figure 5 shows the chemicals given to a student.

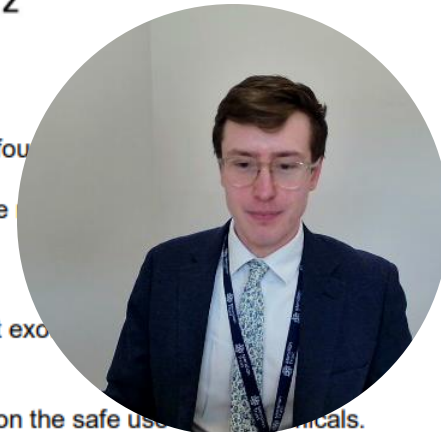


0 6 . 3 The student wants to investigate the reactivity of the four

Outline a plan the student could use to investigate the reactivity of the four metals, W, X, Y and Z.

The plan should use the fact that all four metals react exothermically with dilute sulfuric acid.

You should name the apparatus used and comment on the safe use of chemicals.



Walk Thru- extended response

BOX the command // **Underline** key words// **Structure** answer!

Compare

- Students describe the similarities and/or differences between things, not just write about one

Evaluate

- Students use the information supplied, as well as own knowledge, to consider evidence for and against

Suggest

- Students apply their knowledge and understanding to a new

Plan

- Students write a method



Walk Thru- extended response (1)

0 6 . 4 Poly(ethene) is a polymer made from ethene.

Poly(ethene) is used to make plastic bags.

Table 6 is from a life cycle assessment comparing paper bags and plastic bags.

Table 6

	Paper bag	Plastic bag
Raw material	Wood (renewable)	Oil or gas (non-renewable)
Energy used to make in MJ	1.7	1.5
Solid waste produced in g	50	14
Carbon dioxide produced in kg	0.23	0.53

Evaluate which type of bag is more environmentally friendly.

Use data from Table 6 and your own knowledge to support your answer.

[6 marks]

Paper bags

- Made from renewable resource (wood)
- More sustainable
- Biodegradable
- Need more energy to manufacture (1.7MJ VS 1.5MJ)
- Produce more waste (50g vs 14)
- Produce less CO₂ than plastic (0.23kg vs 0.53kg)

Plastic bags

- Made from finite resource (oil or gas)
- Not sustainable
- Can be recycled

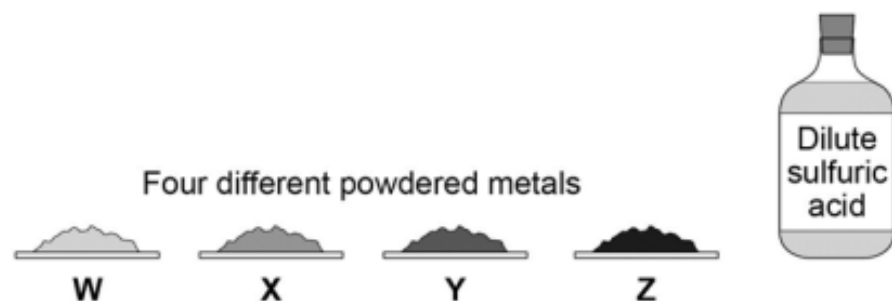
Conclusion: plastic bags have more effect on global warming and so less environmentally friendly



Walk Thru- extended response (2)

Figure 5 shows the chemicals given to a student.

Figure 5



The student wants to investigate the reactivity of the four metals.

Outline a plan the student could use to investigate the relative reactivity of the four metals, W, X, Y and Z.

[6 marks]

The plan should use the fact that all four metals react exothermically with dilute sulfuric acid.

You should name the apparatus used and comment on the safe use of the chemicals.

- using a measuring cylinder, measure 50ml of sulfuric acid into a boiling tube
- Measure the temperature of the sulfuric acid using a thermometer
- Measure the mass of 20g of powder W, using a balance
- Add the 20g of W to the boiling tube, stir and record the temperature after 5mins (stop watch)
- Repeat for X, Y and Z
- Calculate the increase in temperature
- Highest temp increase = most reactive
- For safety, ensure you wear safety glasses



What equipment does my child need to succeed?

- Clear pencil case (for exam regulations)
- Black Pen
- Pencils, rubber, sharpener
- Ruler, protractor
- **Scientific calculator**



What resources are available to support my child?

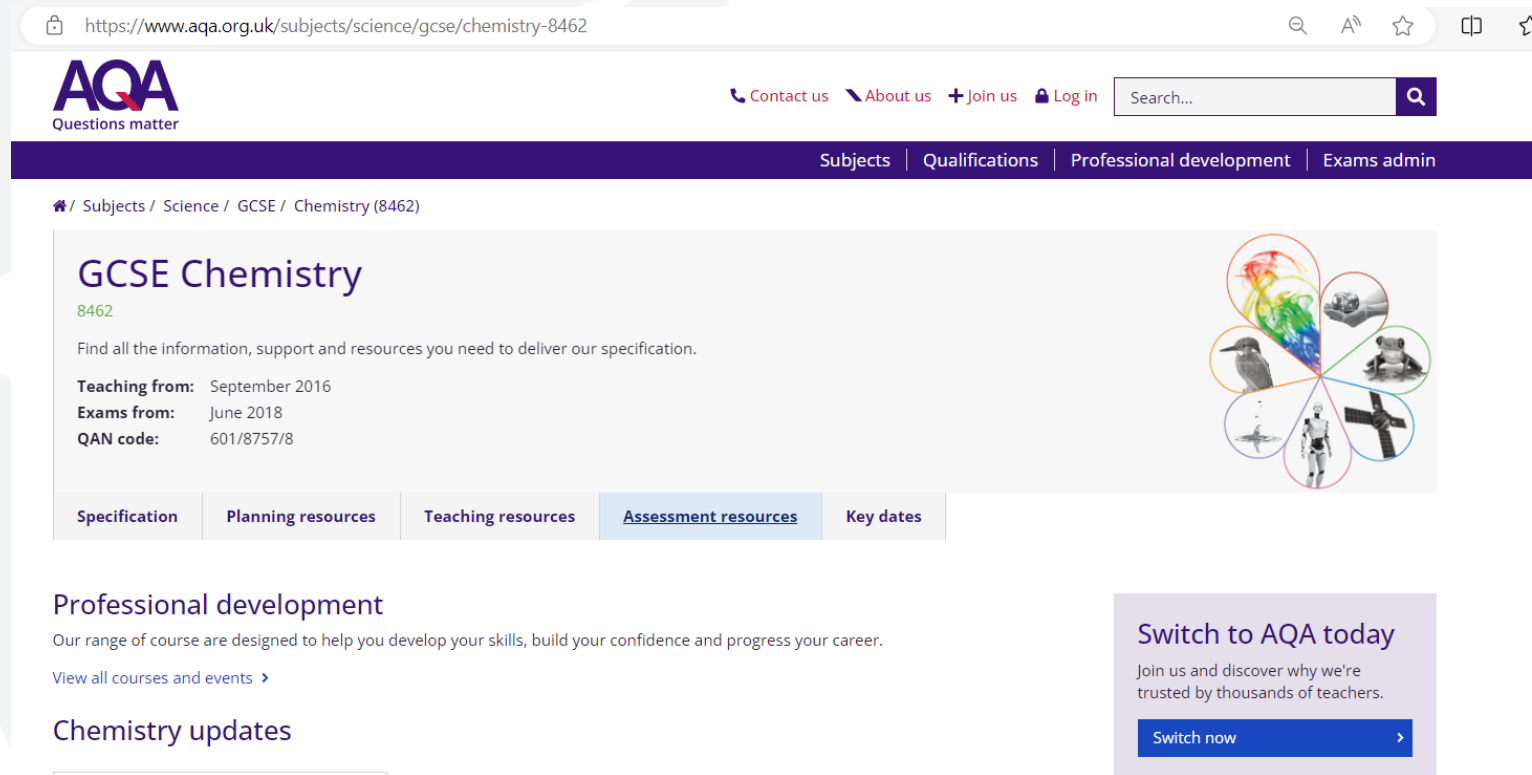
- CGP revision guides– available through school or online
- Online homework platforms e.g. Tassomai
- BBC Bitesize
- YouTube– loads out there.
 - Freesciencelessons
 - Cognito
 - FuseSchool
 - DrphysicsA
 - Primrose Kitten
- [Free online Flashcards for GCSE Revision | Collins](#)

With all of these, make sure you search for 'AQA' as the exam board



What resources are available to support my child?

- Once students have a good grasp of concepts, it is vital to **practice exam-style questions!**



The screenshot shows the AQA website for GCSE Chemistry (8462). The page includes a navigation bar with links for Subjects, Qualifications, Professional development, and Exams admin. The main content area features the GCSE Chemistry title, a brief description, and key dates for teaching and exams. A horizontal menu at the bottom of the main content area highlights 'Assessment resources'. Below this, there are sections for 'Professional development' and 'Chemistry updates'. A sidebar on the right contains a 'Switch to AQA today' button.

https://www.aqa.org.uk/subjects/science/gcse/chemistry-8462

AQA
Questions matter

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Subjects | Qualifications | Professional development | Exams admin

Subjects / Science / GCSE / Chemistry (8462)

GCSE Chemistry

8462

Find all the information, support and resources you need to deliver our specification.

Teaching from: September 2016
Exams from: June 2018
QAN code: 601/8757/8

Specification Planning resources Teaching resources **Assessment resources** Key dates

Professional development

Our range of course are designed to help you develop your skills, build your confidence and progress your career.

[View all courses and events >](#)

Chemistry updates

Switch to AQA today

Join us and discover why we're trusted by thousands of teachers.

[Switch now >](#)



What resources are available to support my child?

- Once students have a good grasp of concepts, it is vital to **practice exam-style questions!**

The screenshot shows the AQA website's search results for chemistry resources. The URL in the browser is <https://www.aqa.org.uk/subjects/science/gcse/chemistry-8462/assessment-resources?f.Resource+type%7C6=Question+papers&f.Component%7C7=Pa...>. The search filters on the left include:

- Resource type (1):** Question papers (checked).
- Component (1):** Paper 1 (checked).
- Exam series (1):** June 2018 (checked).
- Tier:** Foundation (5) and Higher (5) are listed, but none are checked.

The search results on the right show 10 results, all published on 1 May 2019. The results are:

- Insert (Foundation): Paper 1 - June 2018 (PDF, 167 KB)
- Insert (Higher): Paper 1 - June 2018 (PDF, 167 KB)
- Insert (Modified A4 18pt) (Foundation): Paper 1 - June 2018 (PDF, 532 KB)
- Insert (Modified A4 18pt) (Higher): Paper 1 - June 2018 (PDF, 532 KB)
- Question paper (Higher): Paper 1 - June 2018 (PDF, 1.7 MB)
- Question paper (Modified A4 18pt) (Higher): Paper 1 - June 2018 (PDF, 903 KB)
- Question paper (Modified A3 36pt) (Higher): Paper 1 - June 2018 (PDF, 1 MB)
- Question paper (Foundation): Paper 1 - June 2018 (PDF, 705 KB)



What next?

For more help and support please contact your child's Science teacher in the first instance.

