GCSE
SCIENCE

Virtual communities

Resources

Published: Spring 2022

Contents

Assessment Objectives

7.2.1 Assessment objective weightings for GCSE Combined Science: Trilogy

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

7.2 Assessment objectives

Assessment objectives (AOs) are set by Ofqual and are the same across all GCSE Combined Science: Trilogy specifications and all exam boards.

The exams will measure how students have achieved the following assessment objectives.

- AO1: Demonstrate knowledge and understanding of: scientific ideas; scientific techniques and procedures.
- AO2: Apply knowledge and understanding of: scientific ideas; scientific enquiry, techniques and procedures.
- AO3: Analyse information and ideas to: interpret and evaluate; make judgments and draw conclusions; develop and improve experimental procedures.

AO1 definitions

AO1: Demonstrate knowledge and understanding of: ▪ scientific ideas ▪ scientific techniques and procedures.			*40%*
Strands	**Elements**	**Coverage**	**Interpretations and definitions**
1 – Demonstrate knowledge and understanding of scientific ideas.	This strand is a single element.	▪ Full coverage in each set of assessments[2] (but not in every assessment). ▪ No more than 15% of the total marks for the qualification should reward demonstrating knowledge in isolation.[3]	▪ **Scientific ideas** are aspects of the subject content. They include the subject-specific requirements and the requirements for Working Scientifically as set out in the Content Document – for example, theories, models, methods and how these develop over time, as well as recall of mathematical formulae and units. ▪ **Scientific techniques and procedures** encompasses, but is broader than, knowledge and understanding of the core practical activities. In the context of this assessment objective, it involves the knowledge and understanding of such techniques and procedures. ▪ The emphasis in this assessment objective is on Learners recalling and communicating relevant knowledge and understanding from the course of study – for example, facts, definitions, explanations, how to do something and why it should be done in a particular way.
2 – Demonstrate knowledge and understanding of scientific techniques and procedures.	This strand is a single element.		

[2] For the purposes of this guidance, a 'set of assessments' means the assessments to be taken by a particular Learner for a GCSE Qualification in Combined Science. For clarity, the assessments taken by Learners may vary, depending on any possible routes through the qualification.

[3] Marks which 'reward demonstrating knowledge in isolation' means any mark awarded solely for recalling facts or other knowledge that is part of the specification. It does not include marks awarded for selecting appropriate knowledge (for example, to evidence an argument), or for applying knowledge to a particular context.

GCSE sciences command words

Command words are the words and phrases used in exams that tell students how they should answer a question.

Balance

Students need to balance a chemical equation.

Calculate

Students should use numbers given in the question to work out the answer.

Choose

Select from a range of alternatives.

Compare

This requires the student to describe the similarities and/or differences between things, not just write about one.

Complete

Answers should be written in the space provided, for example, on a diagram, in spaces in a sentence or in a table.

Define

Specify the meaning of something.

Describe

Students may be asked to recall some facts, events or process in an accurate way.

Design

Set out how something will be done.

Determine

Use given data or information to obtain and answer.

Draw

To produce, or add to, a diagram.

Estimate

Assign an approximate value.

Evaluate

Students should use the information supplied, as well as their knowledge and understanding, to consider evidence for and against when making a judgement.

Explain

Students should make something clear, or state the reasons for something happening.

Give

Only a short answer is required, not an explanation or a description.

How/What/When/Where/Which/Who/Why

These can be used for more direct questions.

Identify

Name or otherwise characterise.

Justify

Use evidence from the information supplied to support an answer.

Label

Provide appropriate names on a diagram.

Measure

Find an item of data for a given quantity.

Name

Only a short answer is required, not an explanation or a description. Often it can be answered with a single word, phrase or sentence.

Plan

Write a method.

Plot

Mark on a graph using data given.

Predict

Give a plausible outcome.

Show

Provide structured evidence to reach a conclusion.

Sketch

Draw approximately.

Suggest

This term is used in questions where students need to apply their knowledge and understanding to a new situation.

Use

The answer must be based on the information given in the question. Unless the information given in the question is used, no marks can be given. In some cases students might be asked to use their own knowledge and understanding.

Write

Only a short answer is required, not an explanation or a description.

Example knowledge in isolation questions

Below are some examples of knowledge in isolation questions from GCSE Combined Science: Trilogy papers. Each question is accompanied by the area of specification that it assesses. For each one, you can see that the answer is simple recall of information directly from the subject content.

Biology examples

Combined Science Trilogy Paper 1H, June 2019

0 4 Pathogens are microorganisms that cause infectious diseases.

0 4 . 1 What type of pathogen causes malaria?

[1 mark]

Tick (✓) **one** box.

- Bacterium ☐
- Fungus ☐
- Protist ☐
- Virus ☐

Specification reference

The pathogens that cause malaria are protists.

0 7 . 3 Name the reagents used to test for starch and for sugar.

[2 marks]

Starch _____

Sugar _____

Specification reference

Required practical activity 3: use qualitative reagents to test for a range of carbohydrates, lipids and proteins.

To include: Benedict's test for sugars; iodine test for starch; and Biuret reagent for protein.

Chemistry examples

Combined Science Chemistry Paper 1F, June 2019

0 2 . 6 Aluminium is produced by electrolysis of a molten mixture.

Complete the sentence.

Choose the answers from the box.

[2 marks]

carbon	chloride	cryolite	oxide	sulfate	water

The molten mixture contains _____ and

aluminium _____ .

Specification reference

Aluminium is manufactured by the electrolysis of a molten mixture of aluminium oxide and cryolite using carbon as the positive electrode (anode).

0 4 . 4 Sodium chloride (NaCl) is an ionic compound.

Write the formulae of the ions in sodium chloride.

[2 marks]

Sodium ion _____

Chloride ion _____

Specification reference

When a metal atom reacts with a non-metal atom electrons in the outer shell of the metal atom are transferred. Metal atoms lose electrons to become positively charged ions. Non-metal atoms gain electrons to become negatively charged ions. The ions produced by metals in Groups 1 and 2 and by non-metals in Groups 6 and 7 have the electronic structure of a noble gas (Group 0).

The electron transfer during the formation of an ionic compound can be represented by a dot and cross diagram, eg for sodium chloride

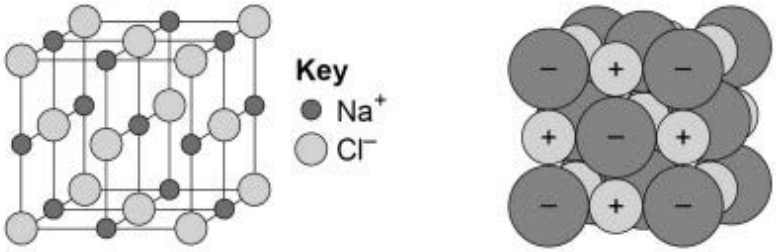
MS 5b

Visualise and represent 2D and 3D forms including two-dimensional representations of 3D objects.

Students should be able to draw dot and cross diagrams for ionic compounds formed by metals in Groups 1 and 2 with non-metals in Groups 6 and 7.

WS 1.2

The structure of sodium chloride can be represented in the following forms:



dimensional representations of 3D objects.

Physics examples

Combined Science Physics, Paper 1F, May 2019

0 6 . 5 Write the equation which links current, potential difference and resistance.

[1 mark]

Specification reference

Current, potential difference or resistance can be calculated using the equation:

$potential\ difference = current \times resistance$

$[V = I R]$

potential difference, V, in volts, V

current, I, in amperes, A (amp is acceptable for ampere)

resistance, R, in ohms, Ω

MS 3b, c

Students should be able to recall and apply this equation.

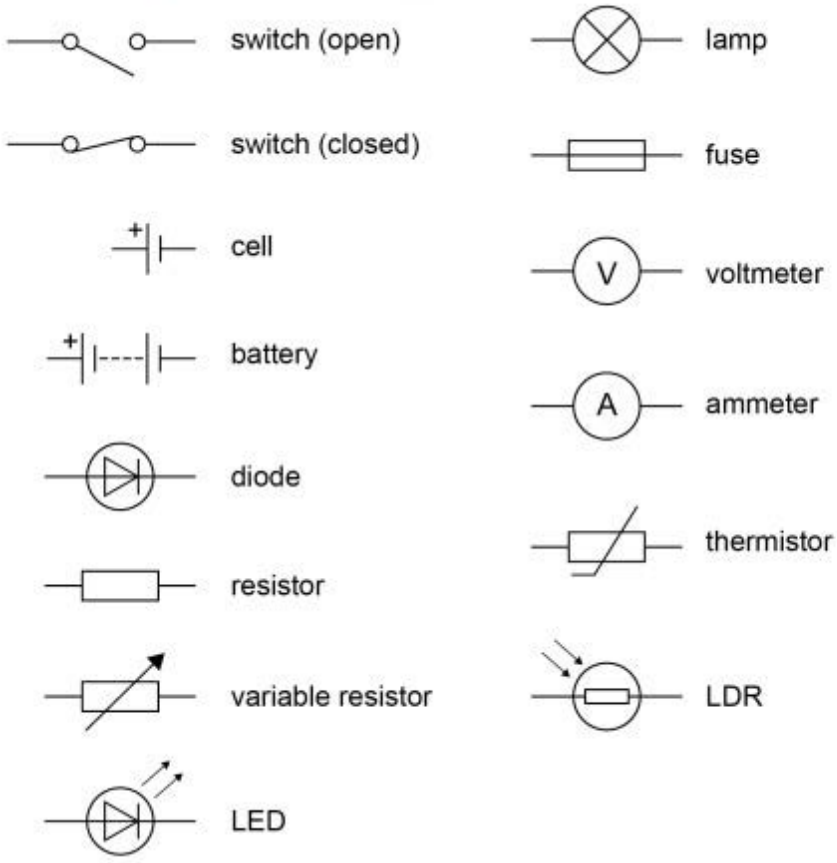
0 4 . 3 Draw the circuit symbol for a thermistor in the box below.

[1 mark]

Specification reference

Circuit diagrams use standard symbols.

WS 1.2



Activity 1

Example 1

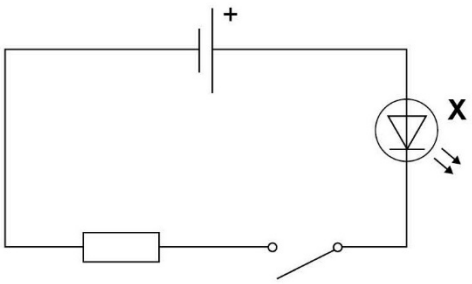
Combined Science Physics Paper 1F, May 2019

0 1 A designer made some shoes that have lights in them.

Each shoe has a switch which closes when a person puts their foot on the floor.

Figure 1 shows the circuit.

Figure 1



0 1 . 1 What is component **X**?

[1 mark]

Tick (✓) **one** box.

Lamp ☐

LDR ☐

LED ☐

Example 2

Combined Science Biology Paper 1H, May 2019

0 4 . 2 Give **two** methods used to prevent people catching malaria.

Give a reason why each method works.

[4 marks]

Method 1 _____

_____

Reason _____

_____

_____

Method 2 _____

_____

Reason _____

_____

_____

Example 3

Combined Science Chemistry, Paper 1F, May 2019

0 3 . 5 Different atoms of argon are, $^{39}_{18}Ar$ and $^{38}_{18}Ar$

What is the name given to these different atoms of argon?

[1 mark]

Tick (✓) **one** box.

Fullerenes ☐

Ions ☐

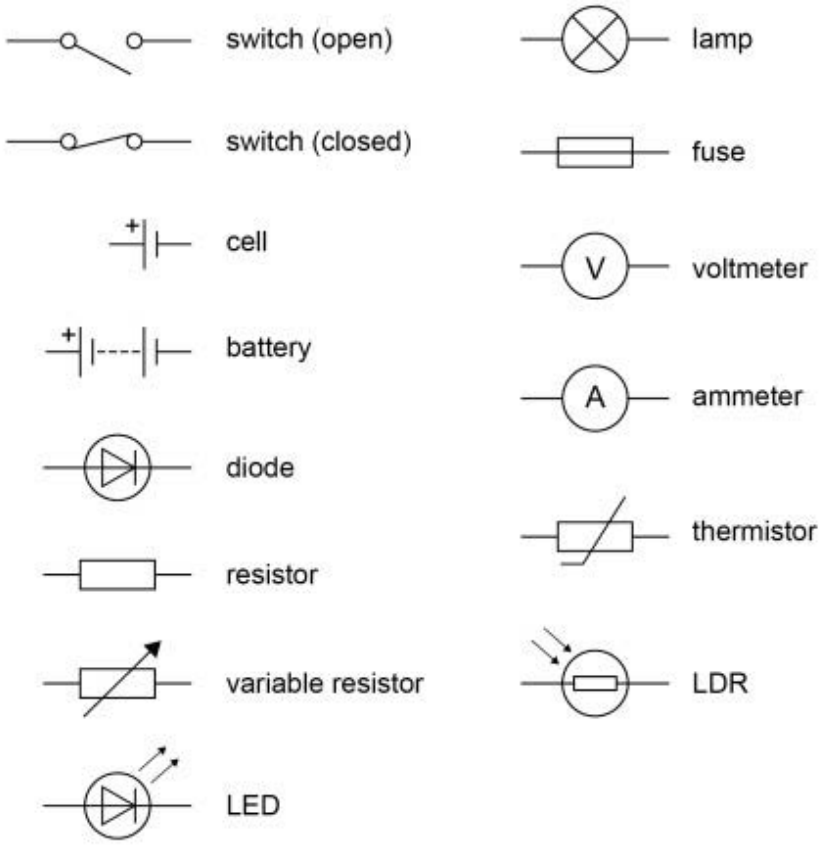
Isotopes ☐

Molecules ☐

Specification content covered by examples

Example 1

6.2.1.1 Standard circuit diagram symbols

Content	Key opportunities for skills development
Circuit diagrams use standard symbols.  Students should be able to draw and interpret circuit diagrams.	WS 1.2

Example 2

4.3.1.1 Communicable (infectious) diseases

Content	Key opportunities for skills development
Students should be able to explain how diseases caused by viruses, bacteria, protists and fungi are spread in animals and plants. Students should be able to explain how the spread of diseases can be reduced or prevented.	WS 1.4

4.3.1.5 Protist diseases

Content	Key opportunities for skills development
The pathogens that cause malaria are protists. The malarial protist has a life cycle that includes the mosquito. Malaria causes recurrent episodes of fever and can be fatal. The spread of malaria is controlled by preventing the vectors, mosquitos, from breeding and by using mosquito nets to avoid being bitten.	

4.3.1.7 Vaccination

Content	Key opportunities for skills development
Students should be able to explain how vaccination will prevent illness in an individual, and how the spread of pathogens can be reduced by immunising a large proportion of the population.	WS 1.4 Evaluate the global use of vaccination in the

5.1.1.5 Size and mass of atoms

<table>
<tr><th>Content</th><th>Key opportunities for skills development</th></tr>
<tr><td>
Atoms are very small, having a radius of about 0.1 nm (1×10^{-10} m).

The radius of a nucleus is less than 1/10 000 of that of the atom (about 1×10^{-14} m).

Almost all of the mass of an atom is in the nucleus.

The relative masses of protons, neutrons and electrons are:

<table>
<tr><th>Name of particle</th><th>Relative mass</th></tr>
<tr><td>Proton</td><td>1</td></tr>
<tr><td>Neutron</td><td>1</td></tr>
<tr><td>Electron</td><td>Very small</td></tr>
</table>

The sum of the protons and neutrons in an atom is its mass number.

Atoms of the same element can have different numbers of neutrons; these atoms are called isotopes of that element.

Atoms can be represented as shown in this example:

(Mass number) 23
(Atomic number) 11 Na

Students should be able to calculate the numbers of protons, neutrons and electrons in an atom or ion, given its atomic number and mass number.
</td><td>
WS 4.3, 4

Use SI units and the prefix nano.

MS 1b

Recognise expressions in standard form.
</td></tr>
<tr><td>Students should be able to relate size and scale of atoms to objects in the physical world.</td><td>MS 1d</td></tr>
</table>

Activity 2

Example 4: Question 3.3, Trilogy Physics Paper 1H, June 2019

0 3 . 3 Mains electricity is an ac supply.

Explain the difference between direct and alternating potential difference.

[2 marks]

03.3	direct potential difference is always in the same direction alternating potential difference changes direction	allow direct current is always in the same direction allow alternating current changes direction	1 1	AO1.1 6.2.3.1

Student responses

0 3 . 3 Mains electricity is an ac supply.

Explain the difference between direct and alternating potential difference.

[2 marks]

Direct is straight to the source. Alternating is going through other circuits before reaching the source.

0 3 . 3 Mains electricity is an ac supply.

Explain the difference between direct and alternating potential difference.

[2 marks]

A direct potential difference has one circuit where as an alternating has many circuits.

0 3 . 3 Mains electricity is an ac supply.

Explain the difference between direct and alternating potential difference.

[2 marks]

Direct potential difference is where the potential difference goes direct to the source. Alternating potential difference is where the potential difference goes to other areas before going to the source.

0 3 . 3 Mains electricity is an ac supply.

Explain the difference between direct and alternating potential difference.

[2 marks]

Direct goes straight to one place while alternating can go to / through multiple places.

0 3 . 3 Mains electricity is an ac supply.

Explain the difference between direct and alternating potential difference.

[2 marks]

~~Direct current is current that goes one way.~~

~~After~~ Direct potential difference is ~~current~~ goes only one way.

Alternating potential difference ~~is~~ is shared between the components.

Report on the exam

03.3 About a third of students gained 2 marks on this question but over half the students gained 0 marks. Answers describing current or potential difference were accepted, but a proportion of students incorrectly described direct current as what happens in a series circuit, and alternating as what happens in a parallel circuit. Other misconceptions included students who suggested that direct potential difference takes a constant value but alternating potential difference changes value. While this may be true, it does not explain the difference between direct and alternating.

Example 5: Question 5.5, Trilogy Biology Paper 1H, June 2019

0 5 . 5 Nitrate ions are essential for plants to grow.

Describe how nitrate ions are used in a plant to help the plant grow.

[3 marks]

05.5	nitrate ions are used with glucose to form amino acids (which are) used to synthesise proteins (needed for growth)		1 1 1	AO1 4.4.1.3 4.4.2.3

Student responses

0 5 . 5 Nitrate ions are essential for plants to grow.

Describe how nitrate ions are used in a plant to help the plant grow.

[3 marks]

The nitrate ions increase the rate at which the phloem transpirates and absorb nutrients which means increased nutrients and minerals from soil so plant grows quicker.

0 5 . 5 Nitrate ions are essential for plants to grow.

Describe how nitrate ions are used in a plant to help the plant grow.

[3 marks]

nutrate ion are absorbed by active transport from a lower concentration to a higher concentration against the concentration gradient. ~~xylem~~ nutrate ion provide the nutriens for the plants in order to grow.

0 5 . 5 Nitrate ions are essential for plants to grow.

Describe how nitrate ions are used in a plant to help the plant grow.

[3 marks]

nitrate ions are absorbed down the phloem in order to provide nutrients ~~for~~ the plants to grow. they reacted with the cytoplasm in plants in order to grow the plant and they use ~~it~~ energy from respiration.

0 5 . 5 Nitrate ions are essential for plants to grow.

Describe how nitrate ions are used in a plant to help the plant grow.

[3 marks]

Nitrate ions are used to produce amino acids. This helps the plant grow as cells are provided with the ~~used~~ right nutrients to survive and grow.

0 5 . 5 Nitrate ions are essential for plants to grow.

Describe how nitrate ions are used in a plant to help the plant grow.

[3 marks]

Nitrate ions can be used for respiration in plants. They ~~bind to~~ combine with glucose and are transported through the xylem. They keep the plant healthy and also help undergo photosynthesis so that the plant can grow.

05.5 Students found this question difficult and approximately 11% scored one or more marks. A direct description, of how nitrate ions are used to help plants grow, was required. Although nitrate ions are used to form other substances in a plant, the direct link between the formation of proteins for growth was needed.

Many students gave a description of nitrate ion uptake and transport in the plant, but this did not answer the question. Reference to active transport was often seen. Many thought that nitrate ions are transported in phloem. The use of nitrates as a food or as a source of energy was often stated. Some thought that nitrates contain glucose.

Example 6: Question 6.3, Trilogy Chemistry Paper 1H, June 2019

0 6 . 3 Explain why sodium is less reactive than potassium.

[4 marks]

06.3		allow converse for potassium		AO1 5.1.2.5
	(sodium has) fewer energy levels / shells	allow diagrams of electron structure	1	
	outer electron / shell is closer to nucleus **or** outer electron / shell is less shielded		1	
	(so) greater attraction between nucleus and outer electron / shell		1	
	(so) outer electron is less easily lost	allow (so) loses an / one electron less easily allow (so) more energy needed to remove an / one electron	1	

Student responses

0 6 . 3 Explain why sodium is less reactive than potassium.

[4 marks]

When an element is reactive, it wants to gain a full outer shell. Potassium has an outer shell consisting of many more electrons in comparison to sodium so while they only need 1 more electron to become stable, if potassium where to loose eleetrons it would become more unstable than sodium hence why potassium is more reactive.

Question 6 continues on the next page

0 6 . 3 Explain why sodium is less reactive than potassium.

[4 marks]

Sodium is above potassium in the reactivity series this is because sodium has a full outer shell of electrons whereas potassium doesn't. Sodium has more protons and electrons than potassium. Sodium has less protons & electrons than potassium so it gains them during the reaction. potassium has a higher relative atomic mass than sodium. Sodium is higher than potassium in Group 1.

0 6 . 3 Explain why sodium is less reactive than potassium.

[4 marks]

Because the metals are in Group 1 (alkali metals) they are already quite reactive, but unstable as they have 1 electron in outer most shell. Sodium isn't as reactive as potassium because the atomic mass number is lower, meaning it has less neutrons and electrons, and a smaller nucleus and it's about the forces of attraction as 1 electron is more attracted to the nucleus than a full outer shell.

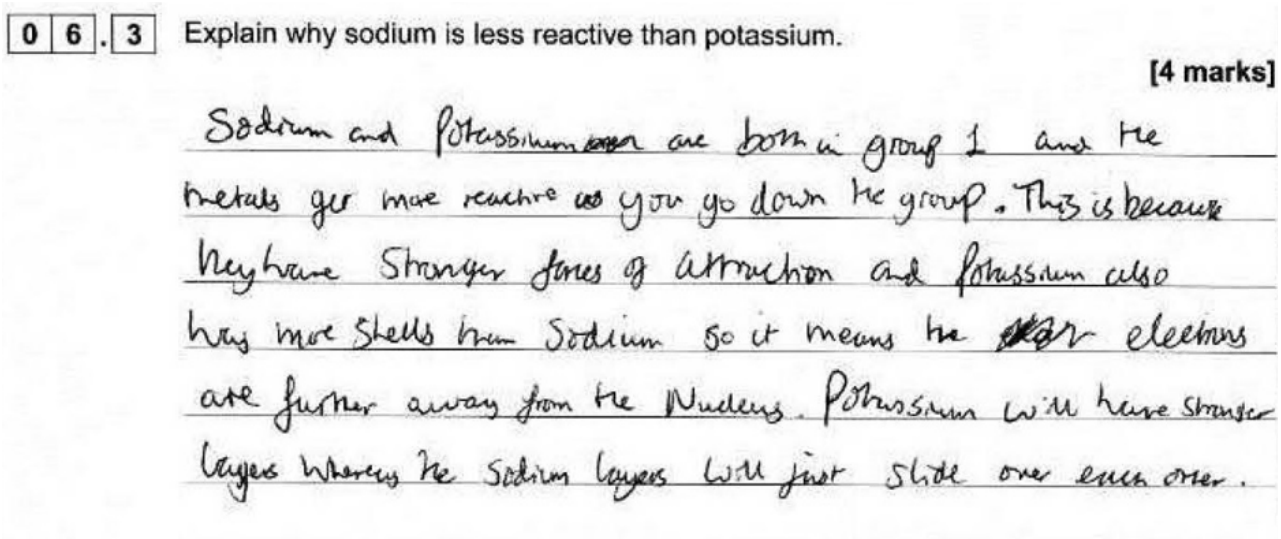
0 6 . 3 Explain why sodium is less reactive than potassium.

[4 marks]

Sodium is less reactive then potassium because it has less shells. Sodium has 3 shells (2, 8, 1) where as potassium has 4 shells (2, 8, 8, 1) meaning that less energy is required in order to react sodium. This results in sodium being less reactive.

0 6 . 3 Explain why sodium is less reactive than potassium.

[4 marks]



Report on the exam

06.3 This question achieved a spread of marks and discriminated very well. 'More outer shells' and references to intermolecular forces were often seen; only molecules can have intermolecular forces. References to potassium 'having a higher melting or boiling point' or 'bigger atomic mass or atomic number' were also given as reasons for it being more reactive; these answers displayed confusion in the difference between chemical and physical properties.

There were many vague statements about the trend in reactivity down Group 1, but these did not gain any credit. Students often made statements about electrons and shells but did not specifically mention electrons in the outer shell. Many students understood that there was a force holding the outer shell electron, but it was a common error to not mention the nucleus or that it was a force of attraction. Those students who mentioned that there was a force of attraction often omitted to mention that it decreased down the group. Marking point 4 was the most commonly awarded mark, with students explaining the ease of losing an electron in terms of sodium and potassium.

Activity 3

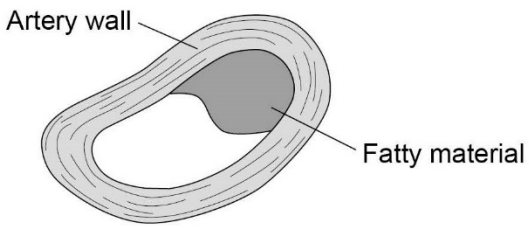
Example 7: Question 2.2, Trilogy Biology Paper 1H, June 2018

0 2 Coronary heart disease (CHD) is a non-communicable disease.

CHD is caused when fatty material builds up in the coronary arteries.

Figure 4 shows a coronary artery of someone with CHD.

Figure 4



0 2 . 2 Explain how CHD can cause a heart attack.

[3 marks]

02.2		allow 'it' for heart		AO1 4.2.2.4
	reduced / restricted / stopped blood flow	it does not matter where blood flow is restricted to – heart / body	1	
	(so) less oxygen reaches heart (muscle / cells)	must reference heart / it allow no oxygen reaches the heart (muscle / cells)	1	
	(so heart muscle / cells) cannot respire (enough) **or** (so heart muscle / cells) do not release (enough) energy	do **not** accept do not make / produce / create energy ignore references to breathing / suffocation ignore blood clots / blockages	1	

Report on the exam

02.2 The majority of students gained the first marking point for stating that blood flow is reduced in people with CHD.

For the second marking point it had to be clear that this would result in less oxygen reaching the cells of the heart, as the question asked how CHD can cause a heart attack. Many students wrote about less oxygen reaching other parts of the body.

The last marking point needed a link to less respiration or insufficient energy release. Students often incorrectly referred to less energy being made, created or produced.

There were very few three-mark answers seen (2%). Of these, some gave a complete story linking reduced respiration to there being insufficient energy released for the heart muscle to contract.

Specification content covered

4.2.2.4 Coronary heart disease: a non-communicable disease

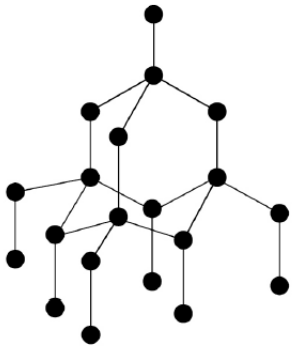
Content	Key opportunities for skills development
Students should be able to evaluate the advantages and disadvantages of treating cardiovascular diseases by drugs, mechanical devices or transplant. In coronary heart disease layers of fatty material build up inside the coronary arteries, narrowing them. This reduces the flow of blood through the coronary arteries, resulting in a lack of oxygen for the heart muscle. Stents are used to keep the coronary arteries open. Statins are widely used to reduce blood cholesterol levels which slows down the rate of fatty material deposit.	WS 1.4 WS 1.3 Evaluate methods of treatment bearing in mind the benefits and risks associated with the treatment.

Example 8: Question 5.1, Trilogy Chemistry Paper 1H, June 2019

0 5 This question is about structure and bonding.

0 5 . 1 **Figure 5** shows part of the structure and bonding in diamond.

Figure 5



Explain why diamond has a high melting point.

[3 marks]

05.1		**max 2** for incorrect reference to particles or bonds		AO1 5.2.3.1
	covalent bonds		1	
	giant structure / macromolecule	allow each C has 4 bonds allow giant covalent structure for **2** marks allow giant ionic / lattice structure for **1** mark ignore lattice	1	
	lots of <u>energy</u> needed to break / overcome	allow disrupt structure ignore heat and high temperature if no other marks awarded allow **1** mark for strong / many bonds	1	

Report on the exam

05.1 The question was well attempted with 80% of students achieving at least one mark. The marks awarded were fairly evenly distributed between the three marking points.

Students rarely achieved full marks (14%), often because they confused the type of particles or bonding involved. While many could identify that covalent bonds were used and lots of energy was needed to break these bonds, they found it difficult to describe the structure involved.

A common response was that diamond contains four carbon atoms rather than each carbon atom having four bonds, which would have been sufficient to be awarded the second marking point.

Specification content covered

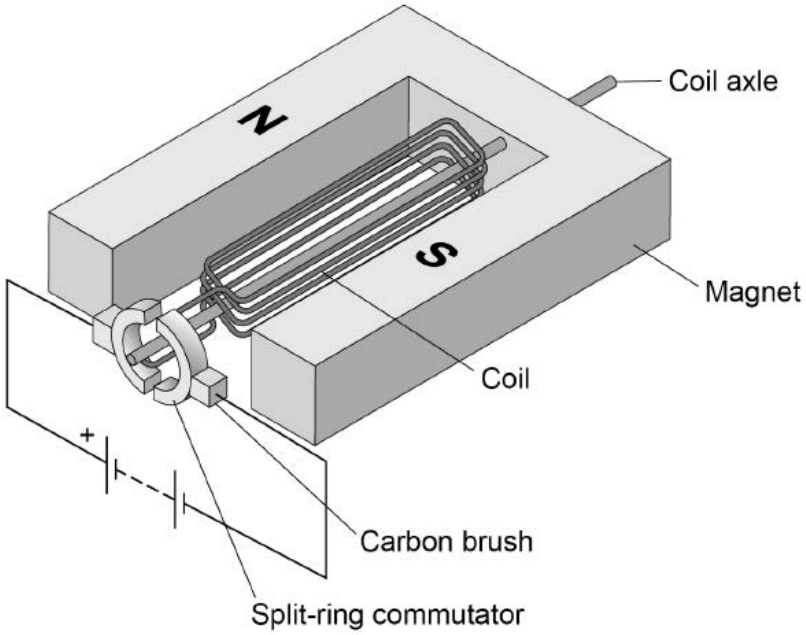
5.2.3.1 Diamond

Content	Key opportunities for skills development
In diamond, each carbon atom forms four covalent bonds with other carbon atoms in a giant covalent structure, so diamond is very hard, has a very high melting point and does not conduct electricity.	MS 5b Visualise and represent 2D and 3D forms including two-dimensional representations of 3D objects.
Students should be able to explain the properties of diamond in terms of its structure and bonding.	WS 1.2

Example 9: Question 4.4, Trilogy Physics Paper 2H, June 2019

0 4 . 4 **Figure 7** shows a simple motor.

Figure 7



Explain why the coil rotates when there is a current in the coil.

[4 marks]

04.4	there is a magnetic field (due to the permanent magnet) **and** current in a wire causes a magnetic field		1	AO1 6.7.2.3
	current is in opposite directions in each side of the coil		1	
	so forces act in opposite directions on either side of the coil		1	
	(the split ring ensures that) the current in the left / right side of the coil is always in the same direction	allow (the split ring ensures that) the force in the left / right side of the coil is always in the same direction allow the current reverses each half rotation	1	

04.4 Very few students scored full marks on this question. Three quarters of students scored 0 marks. Some students drew force arrows on the diagram, which enhanced their response. Less effective responses often scored mp1 and mp4. Common errors included mixing magnetism and charges attracting or repelling, discussing motion of either side of the coil rather than forces, or only discussing current and force on one side of the coil. Many students spent too long discussing the interaction of the magnetic fields so ran out of space for other points.

Specification content covered

6.7.2.3 Electric motors (HT only)

Content	Key opportunities for skills development
A coil of wire carrying a current in a magnetic field tends to rotate. This is the basis of an electric motor. Students should be able to explain how the force on a conductor in a magnetic field causes the rotation of the coil in an electric motor.	

Resources

Hub resources on the website

The following table lists the PDF resources available for the GCSE science Hub and *Virtual communities* meetings, from spring 2020 to autumn 2021. It also includes a brief description of what each document is about.

All resources can be downloaded from the science hub pages on the AQA website. Usually only materials from the most recent three meetings are on this page, but all other materials (including pre-2020 materials) can be found on the hub archive page.

Meeting session	Title of document	What it's about
Autumn 2021	Presentation slides	• Supporting students in their application of practical skills in unfamiliar contexts • Understanding the differences between 'hands-on' and 'minds-on' • Advantages of using a 'minds-on' approach • Using questions to aid progression to 'minds-on' • Introducing Project Calibrate
	Resource booklet	• Working scientifically 'hands-on' and 'minds-on' criteria • Developing a framework of questions to encourage 'minds-on' approach to practical work • Suggested questions for interrogating an experimental method
	Facilitation pack booklet	• Resource for teachers to deliver their own CPD session for colleagues with activities and resources linked to the *Virtual communities* topic.
	Facilitation pack presentation slides	• A copy of the PowerPoint from the meeting with notes for the presenter
Summer 2021	Presentation slides	• Supporting transition from KS3 to GCSE and from GCSE to A-level using a key transferrable maths skill in science (use of standard form) as an example • The requirements for the skill and

		how they are assessed at the different key stages • Ideas for how you can enable student progression AQA resources to aid this progression • Updates for arrangements for autumn 2021 and summer 2022
	Resource booklet	• Links to online resources • Example questions used in the activities • Starter activity flowchart • Example lesson activities • Information on progression in two other key maths skills not covered in the presentation
Spring 2021	Presentation slides	• Brief updates on the autumn 2020 series and what we know for summer 2021 • Supporting the learning gap – ideas and resources from STE • Understanding the requirements of some key command words in exam papers using student responses
	Support booklet	• Summaries of GCSE and A-level results for summer and autumn 2020 • Links to organisations and resources. • Definitions, what examiners are looking for and examples of student responses for the command words describe, explain, compare, evaluate.
	Commentaries booklet	Comments on the student responses regarding how they have, or have not, addressed the requirements of the command word.
Autumn 2020 (*Virtual communities* meetings)	Presentation slides	Focal points for group discussions.
	Supporting materials	• Reminder of situation for 2020/2021 as known at the time • Points to consider in breakout groups for discussions on practical work and importance of mock exams • Details of Apparatus and Techniques criteria covered in the Required Practical Activities for each GCSE

		science
Spring 2020	Presentation slides	• Reflections on mocks and brief reminder on how to use MERiT • How we assess maths skills in GCSE sciences at different levels of demand, using examples of student work • Discussion activity on ways of including opportunities for development of particular maths skills in schemes of work (using AQA schemes as examples) • Update on resources and draft plans for summer 2020 meetings
	Booklet 1	• Guidance on assessment of particular maths skills • Student examples and commentaries for discussion in meeting and in school • Update on where to find resources
	Booklet 2	Extracts from AQA schemes of work for use in the exercise in the meeting.
	Booklet 3	Extracts from AQA specifications for use in the exercise in the meeting.
	Booklet 4	Guide to hub resources on the website (now superseded by this table).
	Maths skills in science: Precision and decimal places	Link to Teachit resource referred to in meeting.
	Maths skills in science: Significant figures	Link to Teachit resource referred to in meeting.
	Mock analysis: Trilogy paper	Examples of how analysis of the Trilogy Paper 1 could be undertaken (repeated from Autumn 2019 meeting, by request).

Additional resources

Below are the links to the resources mentioned in the presentation.

GCSE Subject level guidance for Combined Science

Combined Science: Trilogy specification

Notes

Contact us

Our friendly team will be happy to support you between 8am and 5pm, Monday to Friday.

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