

GCSE science: Virtual communities

Spring 2022



Welcome



Updates

- For up-to-date information and support on the changes for summer 2022, visit the 2021/2022 [exam changes area](#) at aqa.org.uk
- To reflect that we're recovering from a pandemic, Ofqual has said that summer 2022 will be a transition year for grade boundaries. This means they will be set 'based on a profile that reflects a midpoint between 2021 and pre-pandemic grading'.
- Grade boundaries are never set until exams have been sat but, overall, we expect results to be higher than they were in 2019, but not as high as in 2020.
- This will help to mitigate the impact of the pandemic on students sitting exams this summer. [Visit Ofqual's blog](#) to learn more about how they plan to grade exams in summer 2022.

Avoiding malpractice

In line with [JCQ malpractice guidelines](#), please remind students that they must not:

- share assessment material on social media, regardless of whether that material is genuine or fake
- have a mobile phone in the exam, even if it is switched off
- have any notes in their possession, whether relevant to the exam or not
- have a watch of any kind on them in the exam. The [JCQ Instructions for conducting examinations](#) require that a clock must be visible to each candidate in the examination room.

If you're an invigilator in an exam, please ensure that you are up to date with the requirements. Remember that you can't invigilate an exam in the subject that you teach.

If you have any questions, please contact irregularities@aca.org.uk

Exampro

AQA's Exampro question banks prepare students for their first public exams. Explore thousands of past questions with their associated mark schemes and examiner comments to create compilations suiting your students' needs.

Embed questions in:

- homework, to familiarise students with exam materials
- class teaching, for greater understanding of what's being asked
- differentiated, targeted assessments to check learning of content and skills
- revision resources for the best preparation.

AQA's MERiT offers high-quality feedback from mock exams. See the strengths and weaknesses of your class to identify teaching focus; share performance data with SLT; and view student reports to support individual progress.

Today's agenda

- Supporting students in understanding subject content using AO1 questions
- Useful AQA resources
- Materials you should have access to:
 - slides and *Resources* booklet
 - facilitation pack (this will be available after the session)

Using the Advance Information

Consider the following questions:

- How do you plan to use the Advance Information in your teaching?
- How will this help your students?

Focus of today's meeting

- Understanding AO1:
 - the different 'flavours' of AO1
 - relative values of each type on a paper
 - identifying the different types
 - common mistakes students make in answering AO1 questions.
- Helping students improve their confidence with the limited time you have:
 - using the Advance Information
 - using past papers and examiner reports
 - developing strategies to dispel misconceptions and misunderstandings
 - developing formative questions to support learning and revision.

What does AO1 assess?

- AO1 requires students to: 'Demonstrate knowledge and understanding of scientific ideas, techniques and procedures.'
- It comprises 40% of the total marks for the specification.
- The emphasis is on 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.
- Two 'flavours' of AO1:
 - 'knowledge in isolation'
 - knowledge and understanding.

Recognising AO1 questions

- Assessment Objectives are listed in the mark scheme:

01.8	small intestine	allow ileum ignore intestine unqualified do not accept large intestine / duodenum	1	4.1.3.3 4.2.2.1 AO1
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- Typical AO1 command words:
 - complete
 - describe
 - draw
 - explain
 - label
 - name
 - write.
- Multiple choice questions that do not have a command word, such as 'what', 'who', 'where', 'when', 'how'.

The two 'flavours' of AO1

- **Knowledge in isolation** is defined as: '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 (eg to evidence an argument), or for applying knowledge to a particular context.
 - Must comprise no more than 15% of the total marks for the qualification.
- This means that 25% of the total marks are for **knowledge and understanding**.
- Students thus need to do more than just recall facts to gain AO1 marks.
- Combined with the 40% of marks for AO2, 65% of the total marks are for understanding and applying knowledge from the specification.

How to recognise knowledge in isolation questions

- Questions using command words such as 'name', 'describe', 'label', 'what', 'complete', 'explain' (if the specification states that students should be able to explain something specific and the detail of that explanation is given).
- Questions that could be answered simply by recall of a specification point.
- Questions that use standard diagrams such as common cell diagrams, human organs for labelling, heart chambers, chemical symbols, circuit diagrams.
- If all the statements in the mark scheme are straight from the specification, it is likely that the question is testing knowledge in isolation.

The two 'flavours' of AO1 in specification content

Knowledge in isolation

6.2.1.4 Resistors

Content	Key opportunities for skills development
<p>Students should be able to explain that, for some resistors, the value of R remains constant but that in others it can change as the current changes.</p> <p>The current through an ohmic conductor (at a constant temperature) is directly proportional to the potential difference across the resistor. This means that the resistance remains constant as the current changes.</p>	

6.2.3.1 Direct and alternating potential difference

Content	Key opportunities for skills development
<p>Mains electricity is an ac supply. In the United Kingdom the domestic electricity supply has a frequency of 50 Hz and is about 230 V.</p> <p>Students should be able to explain the difference between direct and alternating potential difference.</p>	

Activity 1: Differentiating AO1 questions

- **Example 1** is a test of knowledge in isolation.
 - What in the question indicates this?
- **Example 2** shows a clear distinction between knowledge in isolation (2 marks) and AO1 understanding (2 marks).
 - Which two marks are likely to be for knowledge in isolation?
- Does **Example 3** assess knowledge in isolation?
- To help you, the relevant areas of content covered in each question are on the document.

Activity 1: Feedback

Example 1

- This question requires no understanding of the specification content. Students simply have to recall the standard circuit symbol for an LED, which is given in the specification.

Example 2

- The specification states methods of preventing the spread of malaria in section 4.3.1.5. However, there are no specific details of how methods mentioned will prevent the spread of malaria. So it is the first mark for each method that is the knowledge in isolation mark.

Example 3

- Although 'what' as the question might hint towards it, this is not knowledge in isolation. There are no specification points in the possible answers.
- Students use their understanding of representation of atoms to see that the only difference between the two atoms of argon is the different mass numbers, which means that they are isotopes of the element.

Using AO1 summative questions to aid learning

- Exam questions are **summative** – they assess what a student has learned and understood after a two-year course of study.
- Use summative questions in a **diagnostic** context by:
 - identifying common misconceptions using comments in the examiner reports and experience from your own students.
 - developing short questions to probe these misconceptions further and identify where intervention/focused revision is needed.
- Use summative questions in a **formative** way to aid learning by:
 - identifying the key ideas needed to answer a question.
 - developing short questions to support these ideas and build up a stronger overall understanding that will give students the confidence to tackle the exam question.

Activity 2: Diagnosing misconceptions

Examples 4, 5 and 6 on pages 20–28 of the *Resources* booklet show a question and a number of student responses to AO1 understanding questions from 2019 papers.

Choose one example (depending on your choice of subject):

- What misconceptions would you expect students to exhibit?
- What misconceptions are you seeing in these responses?
- Compare your thoughts with the *Report on the exam*.
- Are there any surprises?
- Put any comments you would like to make for discussion in the chat box.

Activity 3a: Probing misconceptions

- Look at Example 7 on page 29 of the *Resources* booklet.
- First, let's see how it could be used as a **diagnostic** question.
- The *Report on the exam* identifies common misconceptions:
 - generalising to oxygen deficit around the body, rather than writing about oxygen not reaching the heart
 - stating that energy is made, created or produced rather than released, in respiration.
- Suggest some questions you could ask to probe these misconceptions.

Activity 3b: Developing assessments for learning

- Look at Example 7 on page 29 of the *Resources* booklet.
- Let's see how it could be used as a **formative** question.
- Think of what students really need to understand to answer this question.
- Identify two key ideas.
- Think of one or two questions that you could use in homework or revision to embed these ideas.

Activity 3b: Key ideas and possible questions

- Key ideas:
 - arteries carry oxygen in the blood
 - coronary arteries carry blood to the heart
 - respiration using oxygen releases the energy cells need to work.
- Simple probe questions:
 - Which blood vessels carry oxygen around the body in the blood? (This could be a multiple choice, a sentence completion or a straight question.)
 - Which part of the body do coronary arteries carry blood to? (This could be multiple choice: the brain/the heart/the arms and legs.)
 - Cells use respiration to release the energy they need. Complete the word equation for respiration. (Give part of the equation with oxygen missing.)

Summary: Aiding revision for summer 2022

- The Advance Information will indicate the main areas of content that the exams will focus on.
- Use past papers and mark schemes to support revision of this content.
- The mark schemes list the specification content and Assessment Objectives each question covers.
- Use the mark schemes to identify AO1 questions covering some of the content in the Advance Information.
- Use the examiner reports for those questions to highlight common misconceptions.
- Use short probe questions that can be used in class or homework to diagnose where the misconception is for focused intervention.

Summary: Using summative questions to aid learning

- Exam questions are summative – they assess learning at the end of a two-year course.
- You can use exam questions to help support learning throughout the course of study, rather than just assess progress.
- Use past questions to identify key ideas they assess.
- Use the *Report on the exam* to identify any misconceptions students exhibited.
- Devise short questions that can be used in homeworks/class to support the learning of these key ideas.
- Build a bank of such questions for use in future, as it is likely that future students will exhibit the same misconceptions.

Useful AQA resources

- *Focus on success: Disciplinary language*
- *Teaching guide: exploring common misunderstandings*
- *Mark scheme guidance and application* – online, on-demand
- Online course: *Supporting student exam preparation*

Any questions?

- This is your chance to ask any questions you have.
- Any answers to questions that we don't manage to answer today will be sent to you via email approximately one week after this event.

Event materials

These event materials will be available to download shortly. If you can't download them, you can access them at the customer portal of our online booking system.

Once we receive notification that you have attended this course, we'll email you a certificate of attendance. When you receive this email, log in to your account and you'll see these materials on the 'my resources' tab on the welcome screen.

Get in touch

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

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aqa.org.uk



Thank you
