



GCSE

Combined Science: Synergy

8465/2F

Report on the examination

Version: 1.0
June 2025

Further copies of this report are available from aqa.org.uk

AQA retains the copyright on all its publications. However, registered centres for AQA are permitted to copy material from this booklet for their own internal use, with the following important exception: AQA cannot give permission to centres to photocopy any material that is acknowledged to a third party even for internal use within the centre.

General

Almost all questions were attempted by all students and there were some informed answers that demonstrated a breadth of knowledge and understanding.

Some overall observations about the paper include:

- Chemistry and physics questions on this paper were not answered as successfully as biology questions.
- Understanding of required practicals, including reasons why method steps were used, was often weak.
- If a student shows no working for a calculation, if the answer is incorrect, no marks can be awarded.
- For a small number of students, weak handwriting skills made some answers illegible.

Levels of demand

Questions are set at two levels of demand for this paper:

- **Low demand** questions are designed to broadly target grades 1–3.
- **Standard demand** questions are designed to broadly target grades 4–5.

A student's final grade, however, is based on their attainment across the qualification as a whole, not just on questions that may have been targeted at the level at which they are working.

Questions 9 and 10 are common with questions 1 and 2 on the Higher tier. These questions are identical with each other and are targeted at standard demand.

Question 1 (low demand)

- 01.1** Almost half of the students correctly identified liquid as the state of matter. The most common incorrect response was solid.
- 01.2** Almost three quarters of the students correctly identified gas as the state of matter. The most common incorrect response was liquid.
- 01.3** Most students correctly identified B as boiling. Over half of students scored 2 or more marks. Process C was often incorrectly thought to be filtration rather than condensing.
- 01.4** Many students struggled to answer this question, with over three quarters not achieving a mark. Students were confused about the apparatus, with many thinking

that as the test tube was not sealed at the end the solution could be lost. Students also thought changing the flame or how it was heated would improve the results. Very few students commented on the length of the delivery tube, with the most common correct answer being descriptions of how to cool the delivery tube.

- 01.5** Almost half of students that answered this question correctly, stating that pure water boils at exactly 100 °C. The most common incorrect answer was that pure water contains only one type of atom, which demonstrated a misconception about the formula of water and the definition of an atom.
- 01.6** Over a third of students scored both marks for this multiple-choice question. Students who scored one mark usually did so by identifying oxygen as a pure substance.

Question 2 (low and standard demand)

- 02.1** This question was answered well with almost three quarters of student knowing methane is a greenhouse gas.
- 02.2** This mathematical question was answered well with almost two thirds of students achieving a mark. Students who realised that they needed to divide 420 by 0.60 usually achieved both marks. Some students thought they needed to subtract the two numbers which was not creditworthy.
- 02.3** The majority of students correctly gave 420 to 1 significant figure. A misunderstanding over significant figures meant some students gave an incorrect answer of 4.
- 02.4** This question wanted students to name a process that increases the concentration of carbon dioxide in the atmosphere. Many students did not give a named process, instead referring to examples of how carbon dioxide is released, such as by cars or fossil fuels. This did not answer the question so could not achieve a mark.
- 02.5** Basic language was often seen such as “trees breathing in carbon dioxide” which was insufficient for the first marking point. There was a misconception that by trees giving out oxygen this alters the levels of carbon dioxide in the atmosphere. Very few students knew that plants need carbon dioxide for the process of photosynthesis, resulting in less than a quarter of students achieving both marks.
- 02.6** This question was answered well with almost all students gaining at least one mark. If students only scored 1 mark, it was usually for mistakenly thinking that it is a disadvantage when research using climate change data is peer reviewed.
- 02.7** Over four fifths of students knew rising sea levels were an effect of climate change.

Question 3 (low and standard demand)

- 03.1** The majority of students knew that Q was wavelength, however it was relatively common for students to indicate that P was amplitude rather than compression.
- 03.2** Over half of the students achieved a mark for this question by knowing the direction of the oscillations in a longitudinal wave.
- 03.3** Many students did not refer to light at all, instead referring to the smoke or seeing the smoke. This was insufficient and meant that less than a quarter of students achieved a mark for this question. Answers that did not properly compare light to sound, by stating that 'sound is slower' for example, could not gain the mark as it was unclear what the sound was slower than.
- 03.4** Over half of students knew why it is good practice to calculate a mean value in an investigation.
- 03.5** More than three quarters of students achieved 2 or more marks for this question. Most students could get 2 marks for the calculation, but newtons were often incorrectly given as the unit of frequency.

Question 4 (low demand)

- 04.1** This question required the students to state 2 methods of reducing the risk of infection, with over three fifths of students achieving 1 or more marks. Good hygiene, keeping clean, and cleaning the wound were insufficient, as they were too vague. Wash hands was the most frequent correct answer seen, although a range of correct responses were seen which covered all marking points.
- 04.2** If students attempted the question but did not score any marks they had usually not multiplied by 100 but had divided 39 by 1300. Almost half of the students scored both marks.
- 04.3** This question was answered well with almost three quarters of students knowing that HIV damages the immune system.
- 04.4** Over four fifths of students achieved this mark. Antitoxins was the most common incorrect response.
- 04.5** Over half of students achieved one or more marks. If students only achieved one mark it was usually for correctly identifying the reason for animal testing. The reason for clinical trials was the least well known.

Question 5 (low and standard demand)

- 05.1** Over half of students achieved a mark for this question. Cancer and diabetes were the two most common correct answers but a range of correct answers from dementia to

Parkinson's was seen. A few students had not read the question properly so gave heart disease or heart attack as an answer, which were not creditworthy.

- 05.2** This question was answered well with over three quarters of students achieving both marks. Some students misread the question and selected two factors that decreased the risk of CHD which scored zero marks.
- 05.3** Whilst over half of students correctly said a stent can be used to treat CHD, very few recognised that statins also did.
- 05.4** Over half of students knew that differentiation is the process by which stem cells become specialised.
- 05.5** This question was answered well, with almost three quarters of students achieving a mark. The most common incorrect answer was the nervous system.
- 05.6** Students found this question difficult, with just over a tenth scoring one or more marks. Students gave responses such as the tumours spread, but this was not creditworthy as it did not describe how this happens. Very few responses went on to say the cells divide uncontrollably. Dividing or dividing more was insufficient as all cells divide and at certain times some cells do divide more but this does not mean they are malignant tumours.

Question 6 (low and standard demand)

- 06.1** Almost half of students answered this correctly. Some students misread the question and gave the part of the cell where photosynthesis occurred. Carbon dioxide was commonly seen as the incorrect response.
- 06.2** Over half of students correctly identified light intensity as the independent variable.
- 06.3** Less than a tenth of students achieved a mark. The most common incorrect answers were moving the light further away or lowering the light intensity. This would have changed the independent variable for the practical so was incorrect.
- 06.4** This was answered well, with over four fifths of students achieving a mark. Several students correctly read the value for the wrong species. Students should take their time to read both the question and the graph carefully.
- 06.5** The majority of students who understood the value needed was where the two lines crossed were able to correctly read the value off the graph, resulting in over half of students achieving both marks for this question. An incorrect responses of 20cm was commonly seen, which gave the value of the distance between the lamp and test tube that the graph line started from.
- 06.6** Over half of students correctly gave evidence to support the conclusion.

- 06.7** Only a tenth of students correctly answered this question. It identified a misconception with the term particulate, as the most common incorrect answer was carbon monoxide.
- 06.8** This question was answered well with over three quarters of students realising the effect global dimming would have on plant growth rate.

Question 7 (low and standard demand)

- 07.1** Over half of students scored both marks for this question.
- 07.2** Most students realised that the next step would be to breed the offspring together, with over half gaining a mark for this question.
- 07.3** Students struggled to answer this question, with most students not scoring a mark. Answers such as disabilities or deformities unqualified were not creditworthy as the question asked about risk. Inbreeding would not definitely cause a deformity, which is why this mark could not be awarded without saying it increased the risk of the deformity. Very few students attempted to answer in terms of increased risk of disease, but for this marking point it was essential the students said the same disease as it would not just increase the risk of disease.
- 07.4** Over three fifths of students identified that natural selection was the process that caused fruit flies to have short wings.
- 07.5** Four fifths of students knew that farmers spray crops with pesticide to kill fruit flies.
- 07.6** Almost three quarters of students could correctly give an advantage of releasing GM fruit flies.
- 07.7** Over three quarters of students could correctly give a disadvantage of decreasing the population of wild fruit flies.

Question 8 (low and standard demand)

- 08.1** Half of students achieved a mark for this question. When students answered incorrectly, they usually thought the concentration of glucose in the cell was lower.
- 08.2** Most students who did not score a mark thought that active transport was the process that moved glucose. This meant just a fifth of students achieved a mark for this question.
- 08.3** This question was answered well, with over four fifths of students realising that the salamander needed oxygen gas for respiration.

- 08.4** This question was not answered well, with only a tenth of students gaining one or more marks. Many students did not realise it was a shorter distance for the oxygen to travel. Students who attempted the second marking point often wrote vague statements such as ‘for easier diffusion,’ which was not creditworthy.
- 08.5** Almost half of students scored 2 or more marks for this question. Several students misinterpreted the question and attempted to calculate the surface area, volume, and surface area : volume ratio of the salamander. Where students scored one mark it was usually for correctly stating that the volume or surface area of the salamander was lower. Many students incorrectly thought that the surface area : volume ratio of the salamander was less than that of a human.
- 08.6** A tenth of students scored 2 or more marks for this question. Students were asked to describe how the lungs were adapted for gas exchange. Many students instead described the passage of air through the respiratory system, which was not creditworthy. Figure 8 showed the alveoli and capillaries, so we were looking for many alveoli or a large capillary network to gain credit. If students scored a mark, it was usually due to them knowing the purpose of the lungs was to bring oxygen in and remove carbon dioxide. Students who scored all 4 marks demonstrated a comprehensive understanding of the gas exchange surface adaptations and often explained all 4 adaptations in detail.

Question 9 (standard demand)

- 09.1** Almost a third of students did not achieve a mark for this question. Common errors were the rearrangement of the microscopy equation and forgetting to convert the values into micrometres.
- 09.2** Students that drew organelles such as mitochondria and ribosomes could not gain marking point 2 as they had not drawn the cell in Figure 9. If students had drawn the zona pellucida and labelled either the inner line or outer line as the membrane they could gain credit for this as they were not to know what the zona pellucida is. Many students labelled the outer layer as the cell wall, showing a misconception of the parts of the animal cell. Most students gained marking point 1, but where they did not it was usually due to the membrane of the drawn cell having gaps or not connecting into a circular shape.
- 09.3** This question was not answered well, with less than a third of students achieving a mark. A common incorrect answer was chloroplasts, as the students had not realised the question was only referring to animal cells. The nucleus was also a common incorrect answer due to students just stating a cell part that was visible as opposed to only visible in an electron microscope.
- 09.4** This question was not answered well, with over half of students not achieving a mark. Common incorrect answers were mitosis and fertilisation.

- 09.5** Less than a third of students achieved a mark for this question. The most common incorrect responses were 23 pairs, 46 or 24 chromosomes. The students had the misconception that an egg cell was a body cell rather than a gamete.
- 09.6** Almost three quarters of students did not achieve a mark for this question. Many students incorrectly spoke about dominance or just gave the chromosomes present in a male (XY) and female (XX) with no reference to the sperm cell. This was not creditworthy as it did not answer the question.
- 09.7** This question was not answered well, with only a tenth of students knowing LH releases an egg. The most common incorrect answer was oestrogen.
- 09.8** This extended response question was separated into statements regarding effectiveness of contraceptives in perfect use, real use, differences in effectiveness between perfect use and use in real life and possibilities for these differences along with other considerations. To access level 3 analysis of data which compared contraceptives to each other or compared their perfect use to their real use was necessary.

Many students read the values off the graph but did not compare the results. Students who did this gave a level 1 response as they had not attempted to answer the question.

Almost a third of students accessed level 2 with clear comparisons demonstrated between the 3 methods of contraception and real and perfect use. Usually, these student responses contained multiple correct comparative statements but had not used the data from Figure 3 so could not access level 3.

Students who incorrectly read values off the graph and went on to compare those values correctly to each other could still gain credit for their comparative statements. However, the students would not be able to access level 3 as any analysis of data, based on their incorrect graph readings, would be incorrect.

Question 10 (standard demand)

- 10.1** Almost a third of students scored a mark for this question. Students are still referring to beakers and jugs which cannot be used to accurately measure out a volume of water.
- 10.2** The majority of students who scored 1 mark, which was almost half of students, did so by stating that thermometer A was easier to read. Answers that referred to human error unqualified were insufficient for this marking point. More accurate was the second most common correct response. Some students said thermometer A was more precise which demonstrated a misunderstanding between the terms accurate and precise.

- 10.3** Most students who scored a mark, just over a tenth of students, did so by stating the cans had different starting temperatures. Different temperatures unqualified was insufficient as they all had different final temperatures which is not why a valid conclusion could be reached. Hardly any students scored 2 marks, but if they did it was usually for stating that initial temperature should have been controlled.
- 10.4** Approximately three quarters of students knew the advantage of using a datalogger for a cooling curve.
- 10.5** Almost a third of students scored 2 marks. The students usually did so by stating the temperature of the can was greatest at the start. A few students correctly realised the gradient of the line was steepest at the start, but very few gave the reason that the temperature changes most quickly.
- 10.6** Most students realised that the shape of the curve had to be like the line already drawn on the graph. However less than a tenth of students scored a mark, as many of them drew the line below the curve that was already drawn on Figure 13.

Mark Ranges and Award of Grades

Grade boundaries and cumulative percentage grades are available on the [Results Statistics](#) page of the AQA Website.