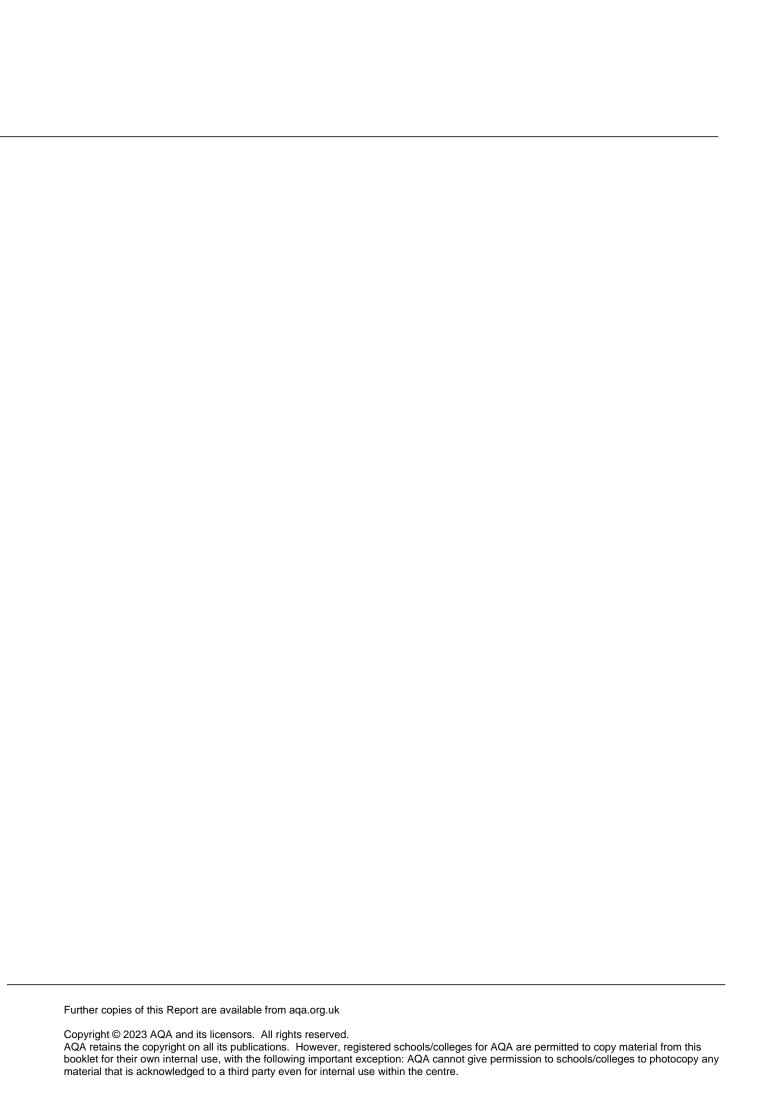# AQA

LEVEL 3
APPLIED SCIENCE

1775/ASC3 Science in the Modern World
Report on the Examination

1775/ASC3
June 2023

Version: 1.0

Overall comments

The majority of students were able to attempt all questions on the paper. However, there were noticeably more non-attempted questions on the paper than in previous series.

Most students were able to answer the questions fully without the need for additional pages, although there was more use of additional pages than the previous few series. The majority of students did not need to use additional pages for the extended response question (Q10), and it was pleasing to see that centres were still following the guidance and encouraging their students to be succinct in their responses.

It was disappointing to see that many students were unable to apply their knowledge of the roles of scientists to the context of sustainable food production. The questions that were left unattempted were often those about types and roles of scientists (Q1.2, Q4.1 and Q12.6), despite all the roles that scientists can perform being on the list in the specification.

Achievement on the mathematical calculations varied significantly. Some students were well-prepared for the type of mathematical calculations required in the ASC3 examination and scored well on all the mathematical questions (Q5.1, Q11.3, Q11.4, Q11.5 and the graph in Q12.1). It was pleasing to see that these students had practiced mathematical calculations in preparation for the examination. However, it was disappointing to see that a number of students did not attempt any of the mathematical questions.

Question 1

1.1. Over 80% of students were able to correctly identify why the statement from the author of Source A was a hypocritical thing to say in this multiple-choice question.

1.2. This question on the role of a zoologist, working for the Sustainable Food Trust, was poorly answered. Over three quarters of students did not achieve a mark here. Centres are reminded that a verb such as 'monitoring', 'investigating', 'advising' or 'educating' is required. Phrases such as 'make sure' and 'look at' were not sufficient.

Question 2

2.1. It was pleasing to see that over half of students were able to correctly explain how loss leader pricing increases supermarket profits. This was good evidence that the pre-release materials had been thoroughly discussed in class. Some students achieved one mark but thought that customers would just buy more of the cheap item rather than other (more profitable) items. A number of students made statements about economies of scale that did not answer the question.

2.2. This question was well-answered with over 80% of students correctly stating that milk was a staple item, in high demand or an item that everybody buys.

Question 3

3.1. Over half of students correctly answered that cheap food is less nutritious. Incorrect answers mostly gave an idea that cheap food contained disease or chemicals such as pesticides.

3.2. Most students scored at least one mark on this question. The most common answers seen were about animals having diseases because they are housed indoors. A small number of students misunderstood the question and spoke about the destruction of wildlife habitats rather than animal welfare.

3.3. Almost 90% of students were able to give an answer about releasing greenhouse gases or deforestation caused by the intensive farming of cattle. Very few students gave correct answers about ammonia.

Question 4

4.1. This question, to name the type of scientists who studies the genes of living organisms, was poorly answered despite being one of the scientists listed in the specification. Less than 20% of students knew that this type of scientist is called a geneticist. Some students almost scored the mark but spelt geneticist so poorly (for example, genesist or genetist) that even pronounced phonetically it was not correct. Some students incorrectly stated genealogist, but the most commonly seen incorrect answers were biologist and microbiologist.

4.2. All answers on the mark scheme were seen in the responses given, with just over 40% of students achieving the mark. Incorrect answers seen generally referred to people having to eat less chickpeas.

4.3. Almost 90% of students achieved the mark here for stating that some strains of chickpeas are able to withstand drought or are resistant to pests.

Question 5

5.1. Approximately one third of students scored both marks on this calculation question for getting an answer of 28.2%. Over 20% of students achieved one mark for the first mark point but then divided by the final population (10) instead of the initial population (7.8) getting an incorrect answer of 22%.

5.2. Over 70% of students scored a mark here for saying that 'destruction / damage to the topsoil' or 'no useable soil' was the reason that we may not be able to feed the world's increasing population in the future. Students who did not achieve a mark generally referred to the population being too big which did not answer the question.

5.3. It was pleasing to see that many students understood the point the author was making about the foods we eat in the quote given about watermelons and peaches in January. Over a quarter of students scored 2 marks for the ideas of foods not being in season and not being locally produced. This demonstrated that the pre-release materials had been discussed thoroughly in class. The two ideas appeared roughly equally in the answers of the 40% of students who scored one of the two marks.

Question 6

6.1. Over 45% of students achieved both marks for explaining how bees can help fix our broken food system, with a similar percentage achieving one of the two mark points.

6.2. This question was well-answered with almost 90% of students achieving both marks. All three answers on the mark scheme were seen. The most commonly seen answer was that drones are used so that farmers can monitor the health of their crops. The second mark was not given to approximately 5% of students who stated that 'issues could be spotted faster', where there was no mention of the context of the farmers or their crops.

Question 7

7.1. Over 85% of students were able to identify a product that a vegan rather than a vegetarian avoids. Milk, eggs, and cheese were the most commonly seen correct answers. A small number of students clearly did not understand the concept of vegetarian or vegan and gave the answer meat.

7.2. Over 50% of students were able to give one or two of the three answers in the mark scheme. All answers were seen roughly equally. Those who did not achieve marks generally referred to wildlife instead of animal products.

7.3. Almost one quarter of students achieved both marks, with a further quarter achieving one mark. The alternative answers on the mark scheme were seen in roughly equal numbers. Answers relating to transporting products were not given credit as plant products also require transport.

Question 8

8.1. Almost half of students scored the mark for the idea that farmers grow what people buy in shops. There were a few incorrect answers relating to monoculture farming methods.

8.2. Nearly all students were able to identify one benefit of sustainable farming to either the environment or human society. Almost half of students were able to identify both benefits and scored 2 marks.

Question 9

This question discriminated well with the most able 20% of students achieving all 4 marks and a further 40% achieving 3 marks. The mark which proved the hardest to achieve was for a disadvantage of mixed farming, with the advantage of monoculture being the mark achieved by those scoring just the one mark.

Question 10

Students achieved across the full range of marks on this extended response question.
Over 15% of students achieved level 3 marks (7 – 9 marks) for detailed descriptions of the validity and effectiveness of the sources in educating students about sustainable food production. These responses were well-structured and included correct use of scientific terminology.

Almost half of students scored within the level 2 marks (4 – 6). Some students only included one reason why a source was / wasn't valid or effective from each source when there were many to write about.

Students scored lower marks if their descriptions did not include validity **and** effectiveness, or if their descriptions were of only one or two of the sources.

Weaker students' responses were often simple statements such as 'Source A is written by a zoologist' or 'Source B is written by the BBC' without actually relating this statement to why a source was or wasn't valid or effective. Some students described what each source was about without any mention of validity or effectiveness, demonstrating that they had not read the question properly. A small number of students described the need for sustainable food production (almost like a presentation to the rest of class) without even mentioning the sources at all. Unfortunately, these students did not score any marks as they had not answered the question.

It was disappointing to see that a larger number of students than usual (approximately 4%) did not even attempt this extended response question.

Question 11

11.1. Almost 80% of students understood that 'habitable land' was land that can be lived on.

11.2. 40% of students scored a mark here with most of these students identifying that water was needed for land to be habitable. A small number of students did correctly identify soil instead. Those who didn't score a mark tended to say plants or agriculture.

11.3. This question discriminated well with the more able 20% of students scoring at least one mark in this difficult calculation. It was pleasing to see that students could identify the correct information from the diagram and calculate the correct answer. However, over a quarter of students did not attempt this question.

11.4. Less than 30% of students scored the mark for this relatively simple calculation. It was disappointing that over 15% of students did not attempt this question.

11.5. Over a third of students scored the mark on this calculation question but, similar to Q11.4, many students (over 20%) did not attempt the question.

11.6. This question was well-answered. Almost 70% of students scored both marks and a further 15% of students scored 1 mark, for identifying data from Figure 1 to support the suggestion given.

Question 12

12.1. Over 40% of students achieved both marks for a graph with axes labelled correctly and bars plotted correctly. A further 40% of students scored one mark, with most of these losing one mark for not labelling the axes.

12.2. Over 70% of students scored at least one mark for correctly suggesting that farm machinery and / or transporting food contributed to carbon dioxide emissions. This question discriminated well, and it was the more able quarter of students who scored both marks.

Weaker students either did not read the question properly and referred to animals or animal waste, or did not attempt the question.

12.3. Almost 40% of students scored a mark for calculating the number of farm mammals for every non-farm mammal. Some students gave the answer as a ratio of 19:1 which was credited. Although the question did discriminate well, it was disappointing to see that a quarter of students did not attempt the question.

12.4. Almost half of students correctly suggested that pesticides or fertilisers from agriculture caused water pollution. Incorrect answers seen included water from washing animals, or animal waste (which was given in the question).

12.5. Most of the students who scored a mark did so for saying that biodiversity is decreasing due to agriculture. Only a small number of students (less than 10%) were able to score both marks for also selecting the correct data from Table 2 to say that agriculture caused 86% of wild animals threatened with extinction. Many students who did not score marks, did not refer to biodiversity or the data from Table 2.

12.6. This question on scientists was better answered than Q1.2 and Q4.1, with over half of students scoring at least one mark. Many could name a biologist as the scientist who would monitor biodiversity. Some students were able to name a toxicologist or chemist as the scientist who would monitor the effects of pollution. It was still disappointing that over 20% of students did not even attempt this question.

Mark Ranges and Award of Grades

Grade boundaries and cumulative percentage grades are available on the Results Statistics page of the AQA Website.