



General Certificate of Secondary Education

**Applied Science (Double Award)
4861**

APSC3 Developing Scientific Skills

Report on the Examination

2010 examination – January series

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Set and published by the Assessment and Qualifications Alliance.

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General comments

Activities

There was a very small entry during this series but it was nice to see quite a wide range of tasks for both units.

Assessment

Annotation was clear in most cases and the inclusion of tick sheets helped the moderation process. There were still some occasions where annotation was missing, particularly for work that did not carry the best marks. All work must be annotated when submitted.

Presentation of work to the moderator

Work was well presented and most centres had used a treasury tag to hold the work together. It would be helpful to the moderator if work was submitted in the order set out on the candidate record form, the work was in the expected order of strands (A, B, C, D then E) and all of the work was orientated the same way.

Unfortunately work was still being sent to the wrong moderator which slowed down the moderation process. There was a severe problem with the weather which also delayed moderation. Some centres still managed to send their paper work and samples on time but some took far more time than the extended 5 days to get their marks to the moderator.

Further support

Teachers are encouraged to make the full use of the guidance available. A Teachers Guide is available which gives more detailed information on portfolio marking and there is also a document available called 'Coursework Information for Centres'. This details general information about entries, notes on each of the units including appropriate tasks, administrative procedures and the role of the portfolio advisor. Both of these are available on the website under 'key materials'. Centres can also access the 'Ask AQA' Science forum from the website.

Strand A: Planning and Following Instructions

Annotation for this strand was better again this series. Unfortunately, there was still a lot of over marking of the risk assessments. Many are awarding stage 3 marks for completing the risk assessments independently even though they were neither complete nor comprehensive. Often only one or two words were given and bacteria or chemicals were not named specifically which is expected at stage 2 and 3. Some of the hazards were still incorrect for example hydrochloric acid being described as highly corrosive. Candidates would not be using acid of this concentration.

Strand B: Obtaining Evidence by Experimenting

The main error in marking seen in strand B was the awarding of 2B3 and 3B3 for bar charts. These marks can only be awarded for a graph with line of best fit which also has all of the relevant labels and units. The lines should also be accurate and drawn with a sharp line.

Tables were being awarded the mark for 2B3 when there were headings and units missing or when every table seen within the sample was identical suggesting that they were provided. The candidate must construct their own table with headings and units to award this mark.

For 3B1 all of the decimal places need to be consistent and the units must be at the top of each column. 3B2 was often awarded where there was no evidence provided by the candidate.

Teacher annotation was required to show that repeats were carried out independently however a comment explaining why repeats were carried out was also required for the second mark. The explanation should be more than 'to make it fairer or more reliable'. 3B2 can not be awarded for tables that have been provided or where the method given to the candidates instructs them to repeat the experiment. On a number of occasions, 3B3 had been annotated next to tables. This mark is linked to independently producing a graph with line of best fit.

Strand C: Analysing and Considering Evidence

Marking was far more accurate and it was becoming increasingly rare that centres had awarded out of stage 1 when either calculations or a comment was missing. 2C1 was still being awarded without any reference to the data collected within the investigation though. At stage 3, to award 3C1, the data must be quantitative and once again refer to the actual results, simply stating 'directly proportional' was not sufficient to gain this mark.

Where candidates have been awarded 3C2, evidence must be provided. Candidates needed to explain for example how they rearranged $V=IR$ to calculate resistance and preferably give a worked example to show their understanding. Similarly, if candidates are for example calculating molarity, they must clearly show how they arrived at their answers.

Strand D: Evaluating Evidence

Evaluations have improved and most centres are ensuring that improvements are justified before awarding 2D2. There are still a number of centres who are awarding stage 3 marks for one or two sentences or a list of bullet points when a detailed evaluation is expected. A detailed discussion of the strengths and weaknesses is required for 3D1 and a detailed evaluation of the improvements to the method and *how* these can help to collect more reliable data is required for two marks at 3D2.

Strand E: Vocational Application

Centres that were most successful in this strand were those who had set the entire investigation in a vocational context from the start. There were still a number of centres seemingly tagging on strand E to a more traditional investigation. Some centres completed this strand very well whilst others were not completing the early strands properly.

At stage 1 the candidate should have linked their investigation to a workplace for example, if they have investigated the effect of temperature on the growth of yeast using a haemocytometer, they could link this to a brewery. Some centres however were missing the application of the *investigation* and were awarding candidates marks for the use of a microscope in different industries.

At stage 2, the workplace should be a specifically named one and the use of the investigation described. For 3E1 scientific explanation was expected when relating the usefulness of the investigation to a scientific workplace. For 3E2, candidates should be encouraged to name organisations and include a few sentences rather than copying and pasting addresses from the Internet.

Mark Ranges and Award of Grades

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