



General Certificate of Secondary Education

Applied Science 4861

APSC3 Developing Scientific Skills

Report on the Examination

2008 examination – January series

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General comments

Activities

Most centres completed a good range of tasks set in interesting vocational contexts. Penalties had generally been applied correctly. It was disappointing to see some centres submitting work with the best marks in only one piece and relatively low marks in the other two.

A lot of downloaded material was being credited throughout: downloaded material (even if sourced) is not creditworthy unless it has clearly been used and rewritten by the candidate.

Assessment

Generosity in marking was mainly due to misinterpretation of the specification requirements or lack of annotation. It is imperative, especially for strands A and B, that teacher annotation clearly supports the marks awarded, shows how much guidance was given and how independently the candidate had completed a task.

Whilst tick sheets are useful at the front of a piece of work, annotation within the work is also needed to show the moderator where the evidence can be found.

Candidates can submit more than one piece of work for each strand for APSC3 – for example, a piece of work on qualitative analysis and a piece on quantitative analysis for the Chemical Analysis Techniques strand. Marks may be taken from both pieces; however, marks within a strand must come from the same piece of work. There should be no mixing and matching of assessment criteria between two pieces of work – for example, one could not award 2A.1 from quantitative analysis and 2A.2 and 2A.3 from qualitative analysis.

Presentation of work to the moderator

Most of the work submitted was generally presented in good order, with the necessary paperwork included. Most centres had adhered to the request not to use bulky folders. It would be helpful if centres punched and tagged work rather than using plastic wallets or paper clips. Centres should not submit classwork or theory work that is not marked or part of the candidate's assessed work.

A number of the Candidate Record Forms seen were incomplete or incorrect, as were the centre mark forms. Centres should check that the mark on the Centre Mark Form matches that on the Candidate Record Form. It is also helpful to the moderator if work is put in the order set out on the Candidate Record Form and the best marks have been identified.

Unfortunately, quite a few centres took a long time to send in the samples requested. It is important that deadlines are adhered to and paperwork is completed and checked carefully so that moderation can run as smoothly as possible.

Further support

Teachers are encouraged to make full use of the guidance available from AQA:

- The Teachers' Guide for the specification gives details on marking portfolios
- The Student Guide to Assessment
- Coursework Information for Centres 2007/2008 (sent out by the Subject Department at the beginning of each academic year) gives general information on entries, specific notes on marking of each unit (including appropriate tasks), administration procedures and the role of the Portfolio Adviser
- Portfolio Advisers
- Teacher Support Network
- Ask AQA for Teachers

Strand A: Planning and Following Instructions

Annotation is vital in this strand, to show the moderator how much guidance a candidate has been given. Most risk assessments were specific to the tasks, although there is still confusion between hazard and risk.

Even at Stage 1 the risk assessment should be complete. Templates are acceptable at all Stages, and the headings 'Materials/Equipment', 'Hazard' 'Risk' 'Control Measure' encouraged. If one line is filled in for the candidate, the highest mark for the risk assessment is Stage 2; if the teacher has provided all of the materials or equipment, then candidates will be limited to Stage 1. Occasionally 3A.2 and 3A.3 had been awarded for simple investigations. To access these marks, the investigation must be complex.

Strand B: Obtaining Evidence by Experimenting

Prepared tables are helpful for lower ability candidates but it should be noted that this limits them to Stage 2 because they cannot be awarded marks for headings and units.

At Stage 2 and Stage 3 there must be evidence *from the candidate* that the experiment has been repeated. If it was not necessary to repeat then, to be awarded 2B.2, the candidate must explain why. To award 3B.2, teachers should annotate the work to show that repeats were carried out independently – but this must still be accompanied by an explanation by the candidate, which should be more than 'to make it fairer' or 'to make it more reliable'.

Graphs with lines of best fit were generally good; however, in a number of cases marks were awarded for computer-generated graphs or for work where no graph was evident and nothing at Stage 3 to compensate. This is a new and unique phenomenon to award above an incomplete stage but centres must follow the guidance carefully. Bar charts can only gain credit at Stage 1. Graphs should be plotted accurately to obtain the marks. The line of best fit should be correct and should be a sharp line. The use of felt tip pens or highlighters should be strongly discouraged.

Strand C: Analysing and Considering Evidence

Where calculations are not applicable Stage 1 is incomplete so, even with compensation from Stage 2, the maximum mark is 4. Where calculations have been carried out but the candidate has not made a concluding comment, the maximum again, with compensation, is 4.

To award 2C.1, the patterns in data should refer to actual results collected by the candidate rather than simple statements. To award 3C.1, the data should be quantitative and once again refer to the actual results.

Where candidates have been awarded 3C.2, there must be evidence explaining how they have rearranged an equation such as $V = IR$ or show understanding in a molarity calculation. Simply substituting numbers into a prepared formula will gain only Stage 2 credit.

Strand D: Evaluating Evidence

Generally this was done well at the lower stages, although some centres are still awarding 2D.2 for improvements that have not been justified. At Stage 3, candidates must give a detailed analysis of strengths and weaknesses and explain in more detail how their suggested improvements would allow the collection of more reliable data.

Strand E: Vocational Application

Candidates were more successful where centres had set the entire piece of work in a vocational context, as this allowed them not only to complete Strand E but also to make more meaningful conclusions. Some centres are still tagging this section on at the end and candidates then find it difficult to relate their investigation to a workplace. It is acceptable to provide candidates with a scenario that sets the mood of the investigation and then build upon this.

At Stage 2, workplaces should be specific named ones rather than a general one such as 'electricians' or 'doctors'.

For 3E.1 scientific explanation is expected when relating the usefulness of the investigation to a scientific workplace. For 3E2, candidates should name organisations and include a few sentences about them, rather than simply copying and pasting addresses off 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.