



General Certificate of Secondary Education

**Applied Science (Double Award)
4861**

**APSC4 Using Scientific Skills for the
Benefit of Society**

Report on the Examination

2010 examination – January series

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General

There were only a very small number of entries in this series, however there were still a number of centres who are not including all of the required risk assessments with each piece of work in this unit. Risk assessments are required for all pieces of work where a practical has been carried out even if there are no apparent hazards. The good practice developed in APSC3 should be carried through into APSC4. This includes completion of risk assessments for each investigation. Lack of a risk assessment for an investigation may result in a candidate not receiving credit for working safely in future series.

Strand A: Monitoring Living Organism

Marking of this strand was quite accurate, especially at the lower stages. Occasionally, centres were still forgetting that 2A3 is a multipart bullet point which requires the candidate to record results, carry out calculations if appropriate *and* discuss patterns with reference to the data collected. There were very few plans in the past tense, centres were recognising the need for plans to be presented in the future tense. Some annotated at stage 3 were still lacking the necessary detail for another person to follow for example, details of quantities, how to take measurements, how often, etc.

Strand B: Making a Useful Product

One of the main problems still seen was that 2B6 was awarded without being related to the investigation carried out which limits candidates to a maximum mark of eleven. The factors chosen must be specific for example in a reaction to make zinc sulphate; candidates could suggest increasing the concentration of the sulphuric acid or warming the sulphuric acid. The factors chosen must be appropriate too; only gaseous reactions are affected by pressure.

At stage 3, the balanced chemical equation must be correct and must use the correct formulae and format for example ZnSO_4 would not be credited since it should be written as ZnSO_4 . Sometimes credit was given for an equation that was incorrect. The equation should also be accompanied by an explanation of the type of reaction and this should be related to the reaction carried out. The equation alone cannot be given credit.

Occasionally it was very difficult to follow cost calculations because centres had calculated cost per mole and / or included all pieces of equipment. It is far easier to calculate the amount of product made and clearly show the quantities used.

Strand C: Assembling an Electronic/Electrical Device

There was clear annotation for making the device but occasionally evidence for actually testing the device was lacking. A comment or results table from the candidate is required. More centres are now correctly crediting the evaluation of the effectiveness of the device rather than the experiment however at stage 3 there has been too much leniency where very little evaluation has been credited. Some centres had awarded 3C2 for independently making the device even though alternative tests had not been suggested. These must be alternative *tests* and not alternative *devices*.

Strand D: Using Machines

An example of a machine and its use in the workplace must be provided in order for candidates to achieve more than one mark. Many were including lots of basic machines but these were not related to a use in a named workplace.

Stage 2 was still lacking in detail and often just a few words were awarded 2D1 and / or 2D2. The candidates must describe how force multipliers work (it is easiest to relate to the machines they have studied in stage 1) and when talking about the effect of friction for 2D2 should use the keywords as set out in the teachers guide (heat loss, energy wastage and efficiency).

Most candidates had completed an experiment to gain credit for 3D1 and carried out calculations. The calculations do need to be clearer. Candidates need to include the formulae they have used and give at least one worked example of each. A spreadsheet or table with calculations included are not credited unless it is clear that the candidate has carried these out themselves and shown understanding.

Mark Ranges and Award of Grades

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