Mathematical Methods GA 1: Unit 3 and 4 Coursework

Unit 4 Coursework

GENERAL COMMENTS

The study design describes the tasks to be undertaken by students for the school-assessed coursework in Unit 4. These tasks are to be a part of the regular teaching and learning program. In addition to this, advice on how this might be implemented in schools was provided by the VCAA in the *Assessment Guide Revised VCE 2001: Mathematics* and the *Revised VCE Studies 2000 Implementation Resource Kit* and materials.

In Unit 4, it was expected that the school-assessed coursework would have students complete two separate analysis tasks. These analysis tasks were to be:

- conducted mainly in class over several periods
- one of the four types specified in the study design
- (one task to be) related to the Statistics and Probability area of study
- different in type
- used to cover the three outcomes.

Overwhelmingly, the tasks developed by schools were appropriate, and conformed to the requirements of the Mathematics Study design.

Teachers adhered to the types specified in the study design, and also drew on support material from the VCAA and previous examinations to develop analysis tasks of the type:

- an assignment where students have the opportunity to work on a broader range of problems

or

- a short and focused investigation, challenging problem or modelling task

or

- a set of application questions requiring extended-response analysis in relation to a particular topic or topics

or

- an item response analysis for a collection of multiple-choice questions.

The tasks should involve both the production of mathematical results (for example, calculations, tables, graphs and diagrams) and the analysis and interpretation of these results.

There was a wide variation in tasks set, although many teachers chose similar types of options for their analysis tasks. This material was creatively adapted to enable students to demonstrate achievement of the three outcomes for the Unit. It was evident that most students completed the task in an appropriate amount of class time, and that the tasks themselves were pitched at a suitable level for students of Mathematical Methods Units 3 and 4.

Some confusion remains with the formulation of *Item Response Analysis* tasks. **Multiple-choice tests do not constitute item response analysis tasks**. While a set of multiple-choice questions could form the **basis** for such a task, it is expected that students are given the opportunity to demonstrate their ability to analyse alternative responses for a given set of items.

Suitable approaches for dealing with item response analysis are those that:

- require students to give reasons why each alternative given is either correct or incorrect
- require students to select some of the alternatives that can be compared as part of the solution process
- detail some or all of a solution process and have students describe the suitability of the process
- explain the errors in a particular process
- vary the question to produce a particular alternative as the correct response.

Logbooks were not always in evidence, but it is considered appropriate for students to complete tasks in what amounts to an examination type booklet where the tasks and the space for their completion are provided. Such a structure should not unduly impede or restrict student responses and should provide sufficient scope for mathematics analysis and interpretation related to Outcome 2 in particular.

The use of technology was in evidence in most tasks, although this was not always explicit. It is recommended that all tasks have components that clearly rely on the use of technology. Given that most schools complete their tasks entirely in class time, it is not surprising that graphics calculators were the most common technology employed by students.

Overall, teachers are efficiently and effectively using outcomes and assessment criteria in developing suitable tasks, and in determining the level of achievement of their students across the three outcomes. It is recommended that teachers pay close attention to outcome-based assessment, and attempt to clearly outline the processes that they have used in doing so with the use of suitable criteria to assist in the assessment of student work.

It is important to ensure that students know and understand the nature and purpose of the task they complete, and the criteria by which it will be assessed, in particular their relation to the outcomes. While teachers will

typically have done this verbally, it is desirable for this information to be clearly laid out in the introduction to the task so that students can refer to this material in developing their response. This aspect of coursework assessment as managed by teachers requires further attention.