1997

Victorian Certificate of Education

Mathematics: Specialist Mathematics Assessment Sheet

CAT 1: Problem-solving task (word limit range 800 – 1200)

GRADE ALLOCATED
A+ to E or UG

B

ADVICE TO TEACHERS

This assessment sheet will assist teachers to allocate a grade. There are two stages to this process. The first stage is to make judgments on the student's performance on each criterion for the task according to the detailed Assessment Advice published by the Board of Studies for this CAT. You should tick Very High, High, Medium, Low, Very Low or Not Shown to indicate how the student performed on each criterion, and comment, where appropriate, on your assessment of the student's performance. The second stage is to arrive at a numerical summary using Very High = 5, High = 4, Medium = 3, Low = 2, Very Low = 1, Not Shown = 0. You should refer to the 'Key to Grade Allocation' to determine the appropriate grade and record the grade in the box (top right-hand corner).

STUDENT NUMBER

ASSESSING SCHOOL NUMBER

CRITERIA FOR THE AWARD OF GRADES

The extent to which the report demonstrates:	Very High	High	Med	Low	Very Low	Not Shown
1 identification of important information, and formulation and explanation of any assumptions	☐	☐	☑	☐	☐	☐
2 correct and appropriate mathematical formulation of the problem	☐	☐	☑	☐	☐	☐
3 analysis of information	☐	☐	☑	☐	☐	☐
4 appropriateness of the selection and use of mathematical language, symbols and conventions	☐	☑	☐	☐	☐	☐
5 correct and accurate use of mathematics	☐	☑	☐	☐	☐	☐
6 appropriateness of mathematics used	☐	☐	☑	☐	☐	☐
7 validity of conclusions	☐	☐	☑	☐	☐	☐
8 interpretation and evaluation of results	☐	☐	☑	☐	☐	☐
9 quality of the account of the problem-solving activity	☐	☐	☑	☐	☐	☐
10 depth of analysis	☐	☐	☑	☐	☐	☐

PERFORMANCE ON CRITERIA: TEACHER'S COMMENTS

You may wish to comment on aspects of the student's work that led to your assessment of Very High, High, Medium, Low, Very Low or Not Shown for specific criteria.

See Comments on Report.

KEY TO GRADE ALLOCATION (COMBINED REPORT AND TEST COMPONENTS)

A+	A	B+	B	C+	C	D+	D	E+	E	UG
83–72	71–64	63–57	56–51	50–45	44–39	38–33	32–27	26–20	19–12	11–0

☐ 8 24 ☐ ☐

NUMERICAL SUMMARY (REPORT) 32 + NUMERICAL SUMMARY (TEST) (FROM TEST MARKING SCHEME) 22

Test not produced for this sample

SPECIALIST MATHEMATICS

CAT 1. Problem-solving task

The extent to which the report demonstrates

Criterion 1	***identification of important information, and formulation and explanation of any assumptions***
VERY HIGH	Clearly demonstrates a sufficient level of understanding about what information is important and appropriate for addressing all aspects of the chosen problem. The report contains an explicit identification of all important variables, assumptions and constraints and of their significance to the problem and its solution.
HIGH	Clearly demonstrates a sufficient level of understanding about what information is important and appropriate for addressing the chosen problem. The report contains an explicit identification of important variables, assumptions, and constraints and of their significance to the problem
MEDIUM	Demonstrates a sufficient level of understanding about what information is important and appropriate for addressing the chosen problem, together with a clear attempt to identify important variables, assumptions and constraints.
LOW	An identification of the basic information required to address the problem. The report contains some appropriate assumptions, but their significance was not explained.
VERY LOW	Very limited identification of important information or assumptions and/or constraints.

Criterion 2	***correct and appropriate mathematical formulation of problem***
VERY HIGH	A correct mathematical formulation of all stages included in the chosen problem in terms which recognise the complexity of the problem. The reasons for the selection and use of the particular mathematical formulation are made explicit.
HIGH	A correct mathematical formulation of all stages included in the chosen problem in terms which recognise the complexity of the problem. The reason for the selection of the mathematical formulation is explained.
MEDIUM	A correct and appropriate mathematical formulation of most aspects of the chosen problem. However, the reasons for their selection and use are not adequately explained.
LOW	A mathematical formulation which is only partially adequate for the task and/or fails to recognise the complexity of the problem. The report does not contain reasons for the selection and use of the mathematical formulation.
VERY LOW	The mathematical formulation is inappropriate, incorrect or is only partially adequate for the task.

Criterion 3	***analysis of information***
VERY HIGH	A discriminating and thorough analysis of information in relation to all aspects of the chosen problem, with an explicit demonstration of its relevance to the problem. The selection and use of graphs and tables is explained and the information generated is clearly relevant to the problem.
HIGH	A discriminating analysis of information with a clear demonstration of its relevance to the chosen problem. The selection and use of graphs and tables is explained and the information is pertinent.
MEDIUM	Some purposeful analysis of the problem chosen; for example, by producing relevant graphs, diagrams, tables, or formulae in a way which addresses the chosen problem. The report may contain insufficient explanation of the analysis.
LOW	Some purposeful analysis of the chosen problem, with a limited demonstration of the relevance of the analysis to the chosen problem.
VERY LOW	A very limited analysis of the chosen problem chosen with some relevant mathematics.

Criterion 4	***appropriateness of the selection and use of mathematical language, symbols and conventions***
VERY HIGH	All mathematical language, symbols and conventions, including presentation of graphs and tables, are appropriately selected, properly defined and correctly used throughout the report.
HIGH	Mathematical language, symbols and conventions are appropriately selected, properly defined and correctly used throughout the report.
MEDIUM	Correct use of mathematical language, symbols and conventions throughout the report. Some symbols and conventions may be inadequately defined or inappropriately selected. Some graphs and tables may be incomplete.
LOW	Some attempt is made to define symbols, together with some correct use of mathematical conventions.
VERY LOW	Some correct use of mathematical language, symbols and conventions, with little definition and/or inappropriate selection.

Criterion 5	***correct and accurate use of mathematics***
VERY HIGH	Correct and accurate use of mathematics throughout the report, with correct recognition of the effect of assumptions, constraints and particular mathematical techniques used on the results obtained.
HIGH	Consistently correct and accurate use of mathematics, with the recognition of the effect of the particular mathematical techniques used on the results obtained.
MEDIUM	The mathematics is generally correct and accurate with some recognition of the effects of the particular mathematical techniques used on the results obtained.
LOW	Some correct and accurate use of mathematics with limited appreciation of the effects of the particular mathematical techniques used on the results obtained.
VERY LOW	Some correct and accurate use of mathematics with no appreciation of effects of the particular mathematical techniques used on the results obtained.

Criterion 6	*appropriateness of mathematics used*
VERY HIGH	A highly elegant mathematical analysis which enables the problem to be solved in a simple, efficient and effective way. The mathematics used demonstrates significant insight into the problem and an ability to identify mathematical connections among various parts of the problem. If mathematical techniques are used which are outside the course material, these are mathematically justified in a way which demonstrates a clear understanding.
HIGH	An elegant mathematical analysis which enables the problem to be solved in a simple, efficient and effective way. The mathematics used demonstrates a good insight into the problem and an ability to identify mathematical connections among various parts of the problem. If mathematical techniques are used which are outside the course material, these are mathematically justified in a way which demonstrates a clear understanding.
MEDIUM	Appropriate use of mathematics, but without such elegance. The mathematics used shows limited insight into the problem and does not address appropriate mathematical connections among various parts of the problem. If mathematical techniques are used which are outside the course material, their use may not always be substantiated or they may be used inappropriately.
LOW	Some appropriate use of mathematics. However, the mathematics used demonstrates limited insight into the chosen problem.
VERY LOW	Uses mathematics which is relevant but which may not be the most appropriate.

Criterion 7	*validity of conclusions*
VERY HIGH	All conclusions are well founded, reasonable and valid in relation to the information provided, the mathematical analysis carried out and the results obtained. The various results are tied together in a way which recognises the complexity of the problem.
HIGH	Conclusions are reasonable, relevant, and valid in relation to the information provided and the results obtained. Conclusions are justified and tied together in a way which recognises the complexity of the problem.
MEDIUM	Requires an attempt to formulate conclusions. Some conclusions may be incomplete, not well founded or not valid in relation to the information provided or the mathematical techniques used.
LOW	Requires an attempt to summarise results but with little evidence of results being tied together.
VERY LOW	Describes a limited attempt to formulate conclusions.

Criterion 8	*interpretation and evaluation of results*
VERY HIGH	A correct explanation of all results and their relevance to the problem-solving task. The reasonableness of all results is evaluated and any limitations identified.
HIGH	An explanation of all results and their relevance to the problem-solving task. The reasonableness of results is checked and any limitations identified.
MEDIUM	Some attempt to explain results and their relevance to the problem. These explanations may not include a check for the reasonableness of results or may not identify limitations.
LOW	Results are presented with limited explanation of their relevance to the problem-solving task.
VERY LOW	Results are presented with a very limited attempt to explain their relevance to the problem-solving task.

Criterion 9	*quality of the account of the problem- solving activity*
VERY HIGH	Clearly communicates an understanding of the problem, the solution processes followed and the conclusions reached. Addresses all stages of the problem. The mathematics, diagrams, tables and discussion are well integrated. The report is well organised.
HIGH	A well organised report which clearly communicates an understanding of the problem, the solution processes followed and the conclusions reached. The mathematics, diagrams, tables and discussion are integrated.
MEDIUM	Communicates an understanding of the problem, the solution processes followed and the conclusions reached. The report may lack organisation or fail to attend fully to all stages of the problem.
LOW	Gives some indication of the solution processes followed and the conclusions reached. Significant aspects of the solution processes followed are not clearly communicated.
VERY LOW	Gives a very limited indication of the solution processes followed and the conclusions reached, or does not communicate clearly important aspects of the problem.

Criterion 10	*depth of analysis*
VERY HIGH	All stages included in the chosen problem are thoroughly investigated. Any generalisations required are correctly and thoroughly analysed and justified mathematically.
HIGH	All stages of the chosen problem are investigated. Any generalisations required are correctly analysed and justified mathematically.
MEDIUM	All stages included in the chosen problem are investigated. The report contains some attempt to describe and justify any generalisations required.
LOW	Most stages included in the chosen problem are investigated. The report contains a limited attempt to describe any generalisations required.
VERY LOW	A problem-solving activity which is superficial or incomplete.