

INFORMATION DOCUMENT

Complementary Examinations 2010

Mathematics, Secondary IV

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|---------------------------------------|--------------------|
| Science Option | 565-410 565-420 |
| Technical and Scientific Option | 564-410 564-420 |
| Cultural, Social and Technical Option | 563-410 563-420 |

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Introduction

For the second consecutive year, the Ministère de l'Éducation, du Loisir et du Sport (MELS) has produced **complementary examinations** for each of the three mathematics options offered in the second year of Secondary Cycle Two. These examinations illustrate how learning is evaluated and prepare schools for the administration of uniform examinations. Although schools are not required to administer the complementary examinations, MELS strongly recommends they do so. Each year, the status of these examinations is specified in the official timetable set by MELS

These complementary examinations provide information on the development of the competencies *Solves a situational problem* and *Uses mathematical reasoning*. The examinations focus on the main concepts and processes covered in the Mathematics program.

These examinations were developed in conjunction with education consultants and teachers from various school boards in Québec. In light of an analysis carried out and feedback received regarding the 2009 complementary examinations, changes were made to this year's examinations to facilitate the marking process and shorten their duration.

The complementary examinations and related documents will be made available to secondary schools in the spring of 2010. School boards and private schools are responsible for making copies of these examination materials.

1. STRUCTURE OF THE COMPLEMENTARY EXAMINATIONS

There are two complementary examinations for each of the three options. The first complementary examination focuses on the competency *Solves a situational problem*, whereas the second focuses on the competency *Uses mathematical reasoning*.

For each of the three options, MELS provides students with the following documents:

For the first complementary examination:

- ♦ A task booklet that provides a description of the situational problem to be solved
- ♦ An answer booklet in which students show all the work they did to solve the problem

For the second complementary examination:

- ♦ A task booklet in which the students show the reasoning they used for each task

MELS provides teachers with a marking guide for each complementary examination in each of the three options.

Each school board or private school receives one paper copy of the complementary examinations and guides and is responsible for reproducing these materials according to its needs.

2. CONTENT OF THE COMPLEMENTARY EXAMINATIONS

The first complementary examination consists of one situational problem.

The second complementary examination contains seven tasks that require the student to explain his or her mathematical reasoning and organize and apply mathematical concepts and processes in a clearly defined context. Because there are different aspects of reasoning, these tasks may involve a variety of different actions (e.g. choosing and using mathematical concepts and processes, justifying, proving, convincing, assessing, taking a position, comparing, deducing, generalizing).

3. CONDITIONS FOR ADMINISTERING THE COMPLEMENTARY EXAMINATIONS

3.1 Examination dates

Schools may not modify the complementary examinations if they administer them on the dates set in the June 2010 exam timetable.

Competency *Solves a situational problem*

- *Science* option: June 1, from 9:00 a.m. to 11:00 a.m.
- *Technical and Scientific* option: June 1, from 9:00 a.m. to 11:00 a.m.
- *Cultural, Social and Technical* option: June 4, from 9:00 a.m. to 11:00 a.m.

Competency *Uses mathematical reasoning*

- *Science* option: June 14, from 9:00 a.m. to 11:00 a.m.
- *Technical and Scientific* option: June 14, from 9:00 a.m. to 11:00 a.m.
- *Cultural, Social and Technical* option: June 16, from 9:00 a.m. to 11:00 a.m.¹

Schools may modify these examinations if they administer them after the dates indicated above, provided that teachers are notified of the changes.

3.2 Time allotted

According to the official timetable, 2 hours are allotted for the completion of the examinations. However, according to the *Administrative Manual for the Certification of Secondary School Studies*, an additional 10 minutes must be allotted for each examination.

Preparation phase

The week before administering each complementary examination

- ◆ Ask the students to prepare a memory aid on one letter-sized sheet of paper (8½ x 11). Both sides of the sheet may be used. Any mechanical reproduction of this memory aid is forbidden.

Performance phase of the complementary examinations

Permitted materials for students

- Memory aid prepared by the student prior to the examination
- Calculator (with or without a graphic display)
- Ruler, compass, protractor, graph paper

Administration of the complementary examinations

- The teacher describes the basic rules for taking the examinations.
- Each student works alone.
- The teacher asks the students to read the instructions in the exam booklets.
- During the examination, the teacher may clarify the meaning of certain words or expressions that are part of the general vocabulary related to the context of the task.

¹ See the June 2010 exam timetable at <http://www.mels.gouv.qc.ca/sanction/horaire/Juin2010.pdf>.

4. DISTRIBUTION OF MATERIALS TO TEACHERS

Those responsible for evaluation in each school are asked to provide the teachers concerned with a copy of all the documents in the complementary examination packages as soon as possible so that they will have time to analyze them.

It is recommended that teachers work together to become familiar with the proposed testing procedure so as to develop a common understanding of the complementary examinations for each option.

5. MARKING PROCEDURES FOR THE COMPLEMENTARY EXAMINATIONS

School boards and private schools are responsible for grading the complementary examinations. However, teachers should agree on how to grade the tasks to ensure a common understanding of the marking scales.

Examples of appropriate solutions and reasoning are presented for the different tasks in the examinations. The scorer must exercise his or her judgment and accept any other appropriate solution or reasoning.

The examination tasks are graded by comparing the student's solution to the different performance levels that take into account the evaluation criteria in the Québec Education Program. The rubrics for each competency evaluated can be used to analyze the students' work. The five performance levels in these rubrics, which are presented as brief descriptions, make it possible to evaluate student work according to the criteria selected. Additional guidelines are provided for each task to facilitate the marking process.

The result obtained on the complementary examination will be expressed as a numerical mark, which is determined based on the weighting of the evaluation criteria for each competency.

For the situational problem, the evaluation criteria must be weighted as follows:

| Weighting of the evaluation criteria | | Solves a situational problem | | | | |
|--------------------------------------|-------|--|----|----|----|---|
| | | Observable indicators corresponding to level | | | | |
| | | A | B | C | D | E |
| Cr. 1 | (40%) | 40 | 32 | 24 | 16 | 8 |
| Cr. 2 | (40%) | 40 | 32 | 24 | 16 | 8 |
| Cr. 3 | (20%) | 20 | 16 | 12 | 8 | 4 |
| Cr. 4 | | | | | | |
| | | | | | | |

For tasks targeting the competency *Uses mathematical reasoning*, the weighting of the evaluation criteria will vary according to the purpose and requirements of the task. The weighting for each task will be provided in the Task Booklets.

6. EXAMINATION RESULTS

The result obtained on the examination targeting the competency *Solves a situational problem* will be a mark out of 100.

The result obtained on the examination targeting the competency *Uses mathematical reasoning* consists of the sum of the results obtained on the examination tasks. The preliminary result obtained on this examination is expressed as a mark out of 700. The final result, expressed as a mark out of 100, is calculated by dividing the preliminary result by 7 and rounding it off to the nearest unit.

7. USING THE COMPLEMENTARY EXAMINATION RESULTS

Schools are responsible for establishing, in their own evaluation standards and procedures, how the results obtained on the complementary examinations will be used. If schools decide to use this examination, MELS recommends that they take these results into account when determining the student's final mark.

The result obtained for a particular competency on the complementary examination may be combined with the result on the competency report, according to a weighting determined by the school.

The results determined above for each competency are then combined according to the weighting determined for mathematics to make up the final subject result.

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