

Information Document

COMPULSORY EXAMINATION

Mathematics
Elementary 6

522-610

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INTRODUCTION

This document provides information on the compulsory Mathematics examination for the end of Elementary Cycle Three. This examination reflects some of the aims of the [Québec Education Program](#) and provides data on student learning by the end of Elementary Cycle Three. On the basis of this data, adjustments can be made and support provided to the education system.

The Ministère de l'Éducation is responsible for developing a compulsory examination to be administered at the end of Elementary Cycle Three in the June examination session.

The examination is based on the [Framework for the Evaluation of Learning](#), the [Progression of Learning](#) and the Québec Education Program. Information gathered on examinations administered in previous years is also taken into account. In addition, the Ministère enlists teachers and education consultants representing different schools to contribute to the development of the examination.

Educational institutions are required to administer each task of the examination in accordance with the [official schedule](#) for the examination session.

Information Specific to the Examination for the 2022-2023 School Year

The compulsory examination is in line with the [Learning to Be Prioritized at the Elementary Level for the 2021-2022 School Year in the Context of the Pandemic](#), which will continue to be applied during the current school year.

The concepts and processes that could be used in the examination are indicated in Appendix I of this document.

The weighting assigned to the compulsory examination is 10%.

1. PRESENTATION OF THE COMPULSORY EXAMINATION

The compulsory Mathematics examination is used to evaluate the competencies *To solve a situational problem related to mathematics* and *To reason using mathematical concepts and processes*.

The evaluation of the two competencies is compulsory.

1.1 Examination documents

For the June examination, the Ministère provides the following documents for students:

- For the competency *To solve a situational problem related to mathematics*:
 - ◆ A Reference Document containing the description of the situational problem
 - ◆ A Student Booklet, in which students record all their work
- For the competency *To reason using mathematical concepts and processes*:
 - ◆ Three booklets, each containing a different situation involving applications and in which students show all their work and record their answer
 - ◆ A Question Booklet, divided into two parts and in which students record their answer for each question

For teachers, the Ministère provides an Administration and Marking Guide.

For each task, the school may provide students with blank sheets of paper, if necessary.

1.2 Distribution of documents to teachers

For the June 2023 examination, the person responsible for administering ministerial examinations in each school must provide the teachers concerned with a copy of all the documents in the examination package seven working days before the first day of the examination.

2. ADMINISTERING THE COMPULSORY EXAMINATION

The June 2023 compulsory examination must be administered over a 3-day period. The various tasks of the examination must be administered in the same order to all students. Each task involves a preparation phase and a performance phase.

The table below presents a breakdown of how the compulsory examination is to be administered, in accordance with the [official schedule](#) for the examination session.

Day 1	1) Administer the first situation involving applications
	2) Administer the second situation involving applications
Day 2	Administer the situational problem
Day 3	1) Administer the third situation involving applications
	2) Administer the Question Booklet

In the interests of equity and justice, the examination must be administered under the same conditions to all students across Québec. The tasks must therefore be carried out according to the instructions provided in the Administration and Marking Guide for the examination.

In this regard, the teacher cannot explain the meaning of mathematical terminology, identify useful information, break down the task into subproblems, provide a mathematical model, indicate concepts to be used, explain concepts, or rectify all or parts of the student's solution. In addition, they must remove any material featuring mathematical concepts and processes that is posted in the examination room. However, the teacher may, if necessary, clarify or explain one or more non-mathematical words or expressions for one or more students. Examinations in which a teacher or any other school staff member is deemed to have overstepped the boundaries of their role may be declared invalid by the Ministère.

During the examination, students are strictly forbidden to have in their possession any digital device (smartphone, wireless headphones or earbuds, smartwatch, etc.) that can be used to communicate, access the Internet, translate text, or create, save or consult data.

Certain digital tools (such as an application with features equivalent to those permitted in a calculator) may be used under certain conditions. Further details will be provided by the Direction de la sanction des études.

2.1 Situations involving applications

The compulsory examination consists of three situations involving applications. Two situations involving applications are administered on the first day of the examination, and another is administered on the third day. Students will have 30 minutes to complete each situation involving applications. They may be given roughly 15 additional minutes for each situation to allow them to finish solving it.

Each situation involving applications must be carried out without interruption.

The titles of the situations involving applications that will be administered each day will be provided in the Administration and Marking Guide for the examination.

For each situation involving applications, the teacher reads the description of the situation with the students before the performance phase begins.

During the preparation and performance phases of each situation involving applications, students may use manipulatives and measuring instruments. The Administration and Marking Guide provides information about the manipulatives that students are permitted to use.

2.2 Situational problem

The situational problem is administered on the second day of the examination. Students will have 2 hours to complete it. They may be given roughly 30 additional minutes to allow them to finish solving the situational problem.

The preparation and performance phases of the situational problem must be completed on the same day but may be broken up by recess or the lunch hour.

Each phase of the situational problem must be carried out without interruption.

A context is provided in order to interest and motivate the students and help them draw upon their prior knowledge or experience related to the situation. The context can be adapted to take into account the specific characteristics of the class.

During the preparation and performance phases of the situational problem, students are permitted to use the following materials only: a calculator, manipulatives, measuring instruments and a handwritten memory aid they will have prepared themselves beforehand (one $8\frac{1}{2} \times 11$ sheet of paper, both sides of which may be used).¹

The Administration and Marking Guide provides tips for the preparation phase and additional information about the manipulatives that students are permitted to use.

2.3 Question Booklet: Mastery of mathematical concepts and processes

The Question Booklet is administered on the third day of the examination. Students will have 60 minutes to complete the Question Booklet. They may be given roughly 15 additional minutes to allow them to finish answering the questions in the Question Booklet.

The Question Booklet must be administered without interruption.

The teacher presents the two parts of the Question Booklet. The Administration and Marking Guide provides tips for the preparation phase and information about the materials that students are permitted to use to complete each part of the Question Booklet.

Visual aids (blackboard, transparencies, interactive whiteboard, etc.) must be used to administer Part A of the Question Booklet. The Administration and Marking Guide provides information in this regard.

2.4 Adaptation measures

Measures that adapt the conditions for administering ministerial examinations may be taken to enable students with specific needs to demonstrate their learning. For further information on the implementation of these measures, please refer to the documents made available to schools by the Direction de la sanction des études.

1. Dictionaries and glossaries are no longer permitted for the situational problem.

3. CONTENT OF THE COMPULSORY EXAMINATION

The concepts and processes that could be used in the examination are indicated in Appendix I of this document.

The three situations involving applications draw upon different contexts. The concepts and processes involved relate to various branches of mathematics covered in the program, namely arithmetic (i.e. natural numbers, decimals, fractions, using numbers), geometry, measurement and statistics.

These situations enable the students to do the following:

- Choose and apply the required mathematical concepts and processes and present a procedure that clearly demonstrates their reasoning.
- Use mathematical arguments to justify a statement, check a result or procedure, take a position, provide a critical assessment or convince others.

The situational problem must meet all of the following conditions:

- The situational problem must call upon students to choose the required mathematical concepts and processes.
- The procedure required to solve the situational problem is not immediately clear, since it involves combining concepts and processes in a new way.
- The situation involves the use of various strategies for understanding, organizing, solving, validating and communicating.
- The instructions do not indicate the procedure to be followed or the essential knowledge to be applied.

The Question Booklet contains questions that will help teachers evaluate the students' knowledge and understanding of mathematical concepts and processes as well as their ability to apply combinations of acquired mathematical concepts and processes.

The mental computation questions in Part A of the Question Booklet are read aloud by the teacher. Part B of the Question Booklet consists of multiple-choice questions and short-answer questions.

Disclosing any information about the content of a ministerial examination to anyone who is not directly involved in its administration is forbidden. It is also forbidden to distribute, adapt or translate any examination document, in whole or in part, at any time or by any means whatsoever, including social media.

4. MARKING THE COMPULSORY EXAMINATION

Educational institutions are responsible for marking this compulsory examination in accordance with the Administration and Marking Guide and the rubrics drawn up by the Ministère and found in Appendices II and III. However, teachers should agree on how to mark the situations involving applications and the situational problem to ensure a common understanding of the related requirements.

5. MARKING SCALES

The results for the two competencies evaluated by the compulsory examination will be expressed as numerical marks. The results for the situational problem and the situations involving applications will be determined based on the weighting of the evaluation criteria.

The weighting of the evaluation criteria presented below is used for the situational problem.

<i>To solve a situational problem related to mathematics</i>					
Evaluation Criteria	Observable indicators corresponding to level				
	A	B	C	D	E
Indication (oral or written) that the situational problem has been understood	40	32	24	16	8
Correct application of the concepts and processes required to produce an appropriate solution	40	32	24	16	8
Explanation (oral or written) of the main aspects of the solution	20	16	12	8	4
	/100				

For the situations involving applications, the weighting of the evaluation criteria will vary according to the purpose of the task.

For tasks in which students must choose and apply the required mathematical concepts and processes and present clear and organized work that shows what they did or how they did it, the weighting of the evaluation criteria presented below is used.

<i>To reason using mathematical concepts and processes</i>					
Evaluation Criteria	Observable indicators corresponding to level				
	A	B	C	D	E
Appropriate analysis of a situation involving applications	30	24	18	12	6
Appropriate application of the required processes	50	40	30	20	10
Correct justification of actions or statements by referring to mathematical concepts and processes	20	16	12	8	4
	/100				

For the task in which students must use mathematical arguments in justifying a statement, taking a position, providing a critical assessment or convincing others, the weighting of the evaluation criteria presented below is used.

<i>To reason using mathematical concepts and processes</i>					
Evaluation Criteria	Observable indicators corresponding to level				
	A	B	C	D	E
Appropriate analysis of a situation involving applications	30	24	18	12	6
Appropriate application of the required processes	40	32	24	16	8
Correct justification of actions or statements by referring to mathematical concepts and processes	30	24	18	12	6
	/100				

6. DETERMINING THE STUDENT'S MARK ON THE COMPULSORY EXAMINATION

The competency *To solve a situational problem related to mathematics*

The examination result for the competency *To solve a situational problem related to mathematics* is the student's mark out of 100 for the situational problem.

The competency *To reason using mathematical concepts and processes*

The preliminary result for the situations involving applications is calculated by adding up the results obtained for the three situations involving applications. The final result for the situations involving applications, expressed as a mark out of 60, is calculated by multiplying the preliminary result by 0.2 and must be rounded off to the nearest whole number.

The total result obtained in the Question Booklet, expressed as a mark out of 40, consists of the sum of the results obtained for the 19 questions in the Question Booklet. Part A is worth 4 marks, and Part B is worth 36 marks.

The examination result for the competency *To reason using mathematical concepts and processes*, expressed as a mark out of 100, is calculated by adding up the final result for the situations involving applications and the total result obtained in the Question Booklet.

Concepts and Processes That Could Be Used in the Compulsory Mathematics Examination for Elementary 6 for the 2022-2023 School Year

Note that the concepts and processes that could be used in the examination for the 2022-2023 school year are in line with the learning to be prioritized in the context of the pandemic. The scope of each concept and process is defined in the [Progression of Learning](#), which also indicates the vocabulary and symbols to be studied.

Arithmetic			
Numbers	Understanding and writing numbers	Meaning of operations involving numbers	Operations involving numbers
Natural numbers	Reading Writing Composition Decomposition Equivalent expressions Comparison Order Number line Power	Choice of operation or operations Translation (meaning of the 4 operations) Meaning of an equality relation Meaning of an equivalence relation Relationships between the operations Properties: commutative, associative and distributive laws Order of operations	Approximating the result Mental computation Written computation Missing term Decomposing into prime factors Calculating the power Divisibility Series of operations in accordance with the order of operations Patterns: series of numbers
Fractions	Various representations Equivalent fractions Order Number line		
Decimals	Reading Writing Composition Decomposition Equivalent expressions Comparison Approximation	Translation (meaning of the 4 operations) Meaning of an equivalence relation Relationships between the operations Properties: commutative, associative and distributive laws	Approximating the result Mental computation Written computation
Integers	Order		
Using Numbers			Converting from one type of notation to another: fractional notation decimal notation percentages

Geometry	
Plane figures Describing triangles Classifying triangles Describing a circle	Space Cartesian plane

Statistics
Interpreting data using a table, a bar graph, a pictograph, a broken-line graph and a circle graph

Measurement			
Lengths Estimating and measuring (conventional units) Relationships between units of measure	Surface areas Estimating and measuring (conventional units)	Volumes Estimating and measuring (conventional units)	Angles Estimating and determining degree measurements

Note: Concepts and processes that are covered in prior cycles and that are used again in Cycle Three according to the Progression of Learning may also be included in the examination.

**RUBRIC FOR THE COMPETENCY
TO SOLVE A SITUATIONAL PROBLEM RELATED TO MATHEMATICS
ELEMENTARY CYCLES TWO AND THREE**

		OBSERVABLE INDICATORS				
		LEVEL A	LEVEL B	LEVEL C	LEVEL D	LEVEL E
EVALUATION CRITERIA	Indication (oral or written) that the situational problem has been understood	<p><i>In solving the situational problem, the student . . .</i></p> <ul style="list-style-type: none"> carries out all the steps takes the relevant information and all the constraints into account may need minor assistance to clarify some aspects of the situational problem 	<p><i>In solving the situational problem, the student . . .</i></p> <ul style="list-style-type: none"> carries out the main steps takes the relevant information and most of the constraints into account may need assistance to clarify some aspects of the situational problem 	<p><i>In solving the situational problem, the student . . .</i></p> <ul style="list-style-type: none"> carries out the main steps takes the main relevant information and some of the constraints into account needs assistance to clarify several aspects of the situational problem 	<p><i>In solving the situational problem, the student . . .</i></p> <ul style="list-style-type: none"> carries out some of the steps takes some of the relevant information and few of the constraints into account needs assistance to clarify most aspects of the situational problem 	<p><i>In solving the situational problem, the student . . .</i></p> <ul style="list-style-type: none"> begins certain steps, but does not complete them takes some information into account but is unable to recognize which information is relevant and takes few or none of the constraints into account needs assistance to clarify all the aspects of the situational problem
	Correct application of the concepts and processes required to produce an appropriate solution	<ul style="list-style-type: none"> uses the required mathematical concepts and processes presents a correct solution or one with few minor mistakes 	<ul style="list-style-type: none"> uses most of the required mathematical concepts and processes presents a solution with some minor mistakes or few conceptual or procedural errors 	<ul style="list-style-type: none"> uses the most important mathematical concepts and processes required presents a solution that contains some conceptual or procedural errors 	<ul style="list-style-type: none"> uses some of the required mathematical concepts and processes presents an incomplete procedure that contains conceptual or procedural errors 	<ul style="list-style-type: none"> uses inappropriate mathematical concepts and processes presents an inappropriate or largely inappropriate procedure that includes several conceptual or procedural errors
	Explanation (oral or written) of the main aspects of the solution Appropriate explanation (oral or written) of how the solution was validated*	<ul style="list-style-type: none"> presents a solution consisting of clear and complete work validates the main steps in the solution and rectifies it, if necessary 	<ul style="list-style-type: none"> presents a solution consisting of clear work, even though some steps are implicit validates some of the steps in the solution and rectifies it, if necessary 	<ul style="list-style-type: none"> presents a solution consisting of incomplete or unclear work makes sure the main steps in the situational problem are completed and validates certain operations 	<ul style="list-style-type: none"> shows work consisting of confusing and isolated elements makes very little effort to review the work shown 	<ul style="list-style-type: none"> shows little work makes no effort to review the work shown

* The student may be provided with feedback on this criterion, but the criterion must not be considered when determining the student’s mark.

**RUBRIC FOR THE COMPETENCY
TO REASON USING MATHEMATICAL CONCEPTS AND PROCESSES
ELEMENTARY CYCLES TWO AND THREE**

		OBSERVABLE INDICATORS				
		LEVEL A	LEVEL B	LEVEL C	LEVEL D	LEVEL E
EVALUATION CRITERIA	Appropriate analysis of a situation involving applications	<ul style="list-style-type: none"> ▪ Identifies all the elements and actions that make it possible to meet the requirements of the situation ▪ Chooses the mathematical concepts and processes that make it possible to meet the requirements of the situation efficiently 	<ul style="list-style-type: none"> ▪ Identifies most of the elements and all the actions that make it possible to meet the requirements of the situation ▪ Chooses the mathematical concepts and processes that make it possible to meet the requirements of the situation appropriately 	<ul style="list-style-type: none"> ▪ Identifies the elements and actions that make it possible to meet the main requirements of the situation ▪ Chooses the mathematical concepts and processes that make it possible to meet the main requirements of the situation 	<ul style="list-style-type: none"> ▪ Identifies elements and actions that make it possible to partially meet some of the requirements of the situation ▪ Chooses mathematical concepts and processes that make it possible to partially meet some of the requirements of the situation 	<ul style="list-style-type: none"> ▪ Identifies elements and actions that have little or no connection to the requirements of the situation ▪ Chooses mathematical concepts and processes that have little or no connection to the requirements of the situation
	Appropriate application of the required processes	<ul style="list-style-type: none"> ▪ Appropriately applies the concepts and processes needed to meet the requirements of the task and makes no mistakes in doing so 	<ul style="list-style-type: none"> ▪ Appropriately applies the concepts and processes needed to meet the requirements of the task, and makes a few minor mistakes 	<ul style="list-style-type: none"> ▪ Applies some of the required concepts and processes, but makes one conceptual or procedural error,* or makes several minor mistakes 	<ul style="list-style-type: none"> ▪ Applies some of the required concepts and processes, but makes two conceptual or procedural errors,* or makes one conceptual or procedural error* regarding a key concept associated with the task 	<ul style="list-style-type: none"> ▪ Applies some concepts and processes, but makes several conceptual or procedural errors,* or applies inappropriate concepts and processes
	Correct justification of actions or statements by referring to mathematical concepts and processes	<ul style="list-style-type: none"> ▪ Presents a clear and complete line of reasoning ▪ Uses rigorous mathematical arguments when required to support actions, conclusions or results 	<ul style="list-style-type: none"> ▪ Presents a clear line of reasoning even though some of its elements are implicit ▪ Uses appropriate mathematical arguments when required to support actions, conclusions or results 	<ul style="list-style-type: none"> ▪ Presents a line of reasoning consisting of incomplete or unclear elements ▪ uses insufficiently detailed mathematical arguments when required to support actions, conclusions or results 	<ul style="list-style-type: none"> ▪ Presents a line of reasoning consisting of isolated and confusing elements ▪ Uses largely inappropriate mathematical arguments when required to support actions, conclusions or results 	<ul style="list-style-type: none"> ▪ Presents a line of reasoning that has little or no connection to the situation, or does not show any work ▪ Uses mathematical arguments that are erroneous or unrelated to the requirements of the situation

* Students who omit a concept or process are considered to have made a conceptual or procedural error.

