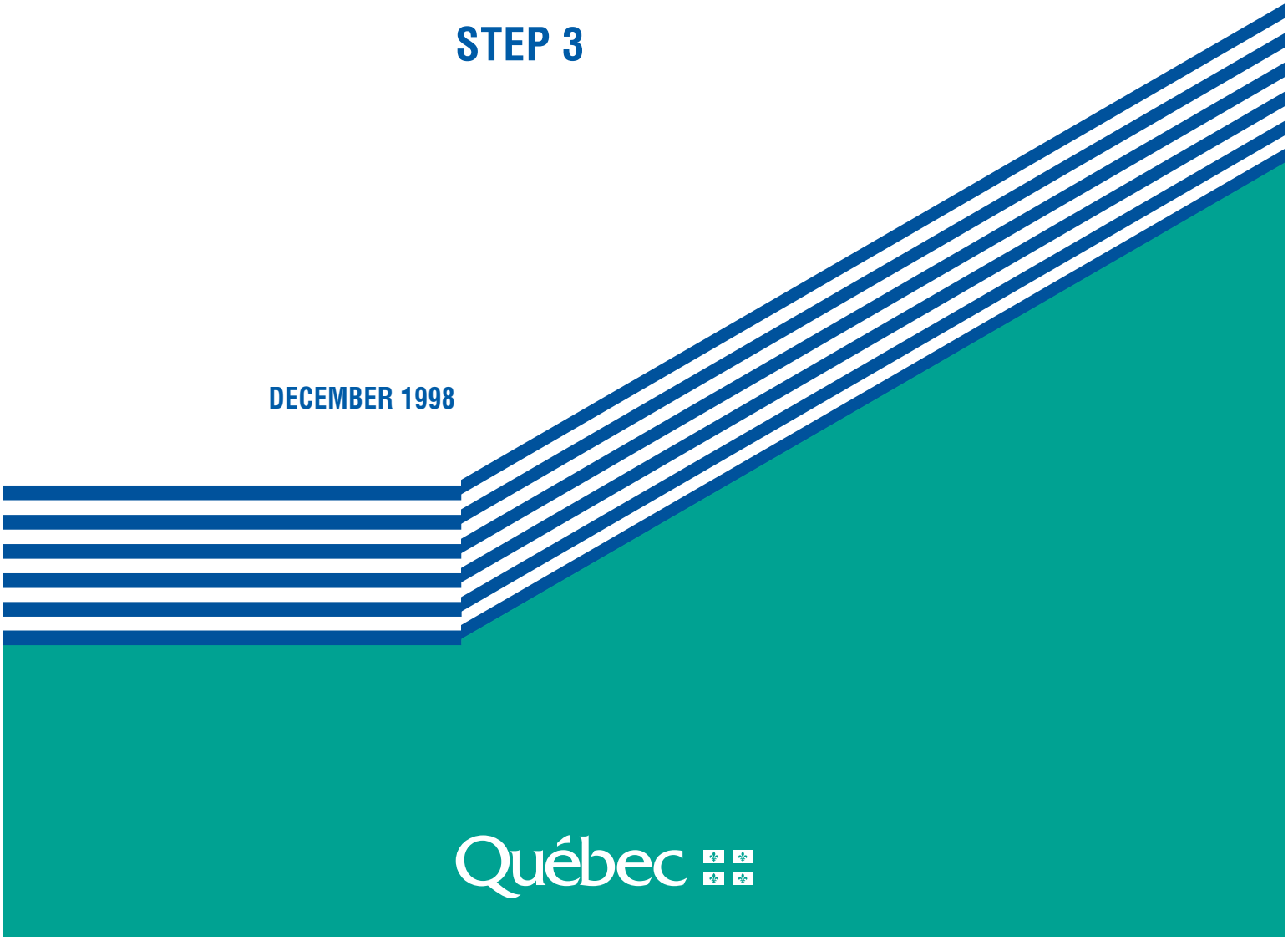
LITERACY TRAINING

ARITHMETIC

DEFINITION OF THE DOMAIN FOR SUMMATIVE EVALUATION

STEP 3



DECEMBER 1998

Québec

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DEFINITION OF THE DOMAIN FOR SUMMATIVE EVALUATION

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Direction de la formation générale des adultes
Service de l'évaluation des apprentissages

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1 INTRODUCTION

This definition of the domain for summative evaluation describes and classifies the essential and representative elements of the *Guide to Customized Literacy Training*, specifically, for the section on *Arithmetic*. It presents an overview of the program, but should by no means replace the program itself. The purpose of defining the domain is to ensure that the summative evaluation instrument is consistent with the overall program.

The definition of the domain for summative evaluation is used to prepare examinations that are valid from one version to another, from one year to another, and from one school board to another, taking into account the responsibilities shared by the ministère de l'Éducation and the school boards.

2 PROGRAM ORIENTATIONS AND THEIR CONSEQUENCES FOR SUMMATIVE EVALUATION

Orientations	Consequences
In the program, learning opportunities are created out of everyday situations to help adults become autonomous.	Summative evaluation items will test the students' ability to act autonomously in everyday situations.
Students learn about proper fractions and decimals as well as concepts related to the metric system by means of themes or concrete situations designed to help them acquire knowledge and skills.	Summative evaluation items will measure the students' knowledge and skills with respect to proper fractions, decimals and metric units. Evaluation tasks must be related to themes or concrete situations.
The program is intended to help students develop a better understanding of the concepts related to the four arithmetic operations by applying their acquired knowledge and skills in everyday situations.	Summative evaluation items will measure the students' knowledge and their ability to use the four arithmetic operations in everyday situations involving proper fractions, decimals and metric units.
In the program, students must solve problems they may encounter in everyday life.	Evaluation tasks that involve problem solving will deal with measurements only and pertain to situations students may encounter in everyday life.
Using concrete situations, the program enables students to learn concepts by means of drawings, symbols and mathematical expressions.	Summative evaluation items will assess the students' ability to work with drawings, symbols and mathematical expressions related to concrete situations.

3 CONTENT AND SKILLS COVERED IN THE PROGRAM FOR PURPOSES OF SUMMATIVE EVALUATION

3.1 **Content**

Numbers
- Proper fractions
- Decimals

Measurement
- Temperature
- Time
- Length
- Liquid volume
- Weight

3.2 **Skills**

Structuring

Students will be familiar with basic mathematical concepts.

Performing Operations

Students will be able to perform operations in a given situation.

Synthesizing

Students will be able to apply their mathematical knowledge and use it to solve problems related to everyday situations.

4 TABLE OF DIMENSIONS

CONTENT **SKILLS**	**NUMBERS** **40%**	**MEASUREMENT** **60%**
STRUCTURING 35%	- Proper fractions - Decimals (1) 20%	- Temperature - Time - Length - Liquid volume - Weight (3) 15%
PERFORMING OPERATIONS 35%	- Proper fractions - Decimals (2) 20%	- Length - Liquid volume - Weight (4) 15%
SYNTHESIZING 30%		- Time - Length - Liquid volume - Weight (5) 30%

5 OBSERVABLE BEHAVIOURS

Relative value of the items
↓ Box numbers in the table of dimensions
↓

2%	(1)	Students will be able to identify three proper fractions in a simple five-sentence text describing an everyday situation involving whole numbers and proper fractions. (3.01-3.02)[1]
2%		Students will be able to match four proper fractions with four drawings. Two of these drawings will show a group of similar objects divided into subgroups and the other two drawings will show a single object divided into equal parts. One or more parts of these four drawings will be shaded in to represent the given fractions. (3.03-3.04)
2%		Given three drawings each showing a specific quantity, students will be able to read and write three proper fractions with positive denominators that are less than 12. (3.05-3.06)
3%		Using the <, > and = signs, students will be able to compare five pairs of proper fractions, some of which will have the same denominator and some of which will have different denominators. (3.07)
3%		Given three different drawings, students will be able to find equivalent improper fractions and mixed numbers with the same denominator. (3.13-3.16)
2%		For each of four given decimals, students will be able to identify the place value of a digit that appears in all four decimal numbers. (3.32)
2%		Given three decimals written as words, students will be able to write them as numerals. One decimal will be expressed in tenths, one in hundredths and another in thousandths. (3.33-3.34)
3%		Using the <, > and = signs, students will be able to compare five pairs of decimals. (3.35)

1. The numbers written in parentheses after each behaviour are the corresponding objectives in the *Guide to Customized Literacy Training, Book 3, Arithmetic*.

1%		Students will be able to arrange five decimals in ascending order. Two numbers will have one digit after the decimal point, two numbers will have two digits after the decimal point and one number will have three digits after the decimal point. (3.37)
5%	(2)	Given five pairs of proper fractions with the same denominator ≤ 12, students will be able to do the following: - three additions; (3.09) - two subtractions. (3.10)
5%		Students will be able to find an equivalent fraction for each of five given fractions. The denominators will be ≤ 12. (3.11)
4%		Students will be able to multiply two different whole numbers by proper fractions with a denominator ≤ 12. (3.25)
6%		Students will be able to round off decimals expressed in tenths, hundredths and thousandths. Three of these decimals will be rounded off to the nearest whole number and three will be rounded off to the nearest half. (3.36)
4%	(3)	Given ten words related to metric units of temperature, length, liquid volume and weight, students will be able to match eight of these words with the corresponding symbols. (3.50-3.61-3.68-3.75)
1%		Given three key points on the temperature scale, students will be able to match two of them with two sentences referring to these key points. (3.53)
2%		Students will be able to write a date and a time in metric units. (3.55)
4%		Given a list of four units used to measure time, students will be able to establish four equivalences between the required units of measurement. (3.56)
1%		Given two short sentences containing words related to measurements of time, students will be able to indicate the temporal frequency corresponding to each term used. (3.57)
3%		Given seven units of measurement related to length, liquid volume and weight, students will be able to determine which unit should be used to measure five given items. (3.62)
2%	(4)	Students will be able to measure two straight lines, one to the nearest centimetre and the other to the nearest millimetre. (3.64)

5%		Students will be able to convert five different values from one metric unit of length to another equivalent unit of length. (3.65)
4%		Students will be able to perform the four basic operations on values expressed in metric units, namely: - one addition and one subtraction involving units of length; (3.66) - one multiplication involving units of liquid volume; (3.73) - one division involving units of weight. (3.80)
4%		Students will be able to establish equivalences by converting: - two values from litres into millilitres; (3.72) - two values from grams into kilograms. (3.79)
15%	(5)	Students will be able to solve three word problems involving the use of metric units of time in everyday situations: - one problem involving one addition and one subtraction; (3.58) - one problem involving one multiplication; (3.59) - one problem involving one division. (3.60)
15%		Students will be able to solve three word problems involving the use of metric units in everyday situations: - one problem involving metric units of length; (3.67) - one problem involving metric units of liquid volume; (3.74) - one problem involving metric units of weight. (3.81)

6 JUSTIFICATION OF CONTENT, SKILLS AND THEIR WEIGHTING

Since the program focuses on helping students to become autonomous and to use their acquired knowledge and skills in everyday situations, most of the objectives regarded as prerequisites (P) in Step 3 have been taken into account in the definition of the domain for summative evaluation.

However, the objectives pertaining to the use of a calculator, to mental calculations and to the use of measuring instruments (thermometer, measuring cup and scales) have not been taken into account, because these aspects involve a certain amount of manipulation and are difficult to assess using a summative evaluation instrument. It is assumed that these skills will have been assessed by means of formative evaluation.

Despite the fact that several objectives in Step 3 of the program are related to proper fractions and decimals and that these are undeniably important, more emphasis has been placed on the objectives pertaining to measurement because it takes longer and requires more work to cover the prerequisites related to metric units. In addition, the students lack the prerequisites needed to develop the ability to synthesize knowledge and skills pertaining to proper fractions and decimals. Note that the ability to mathematize will not be assessed in Step 3, since no objective in this step relates to this skill.

As a result, the content has been weighted as follows:

- Numbers 40%
- Measurement 60%

In Step 3, it is essential that students know and understand the basic mathematical concepts related to numbers and that they then be able to grasp the concepts pertaining to measurement. However, summative evaluation will also be used to ensure that students are able to perform operations and apply their acquired knowledge to solve problems related to everyday situations.

The skills have therefore been weighted as follows:

- Structuring 35%
- Performing operations 35%
- Synthesizing 30%

7 DESCRIPTION OF THE EXAMINATION

7.1 Type of Examination

Each student will take a written examination for purposes of summative evaluation.

7.2 Duration

The examination is written in a single session lasting no more than 90 minutes.

7.3 Materials

Students must have a metric ruler.

Students **ARE NOT PERMITTED** to use a calculator or any other materials.

7.4 Pass Mark

To successfully complete Step 3, students must obtain 60 out of 100 on this examination.

8 BIBLIOGRAPHY

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