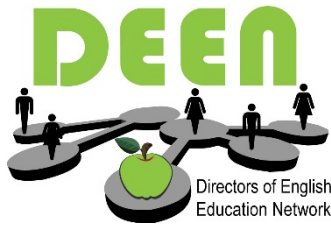


## Learning and Evaluation Situation

# My Mobile Canteen Small Business

## Teacher's Guide





# My Mobile Canteen Small Business

## Learning and Evaluation Situation

**The DEEN (Directors of English Education Network) would like to thank the following school board(s) for the permission to translate and post this Learning and Evaluation Situation (LES) for use in the English schools of Québec:**

Commission scolaire de Kamouraska - Rivière-du-Loup

**The DEEN would also like to recognize the contribution of the following individuals in the creation of this resource:**




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# Teacher's Guide

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# My Mobile Canteen Small Business

## Broad Area of Learning

Throughout this LES, students are preparing to enter the world of work. They will be faced with a realistic work situation in which they will be able to develop their mathematical reasoning and perform some of the main tasks involved in a trade. The Broad Area of Learning **Career Planning and Entrepreneurship** will help make the links to knowledge of the world of work, social roles, and trades and professions.

**Proactive Regulation** is performed by a teacher during the lessons. Discussions provide students with immediate feedback and with information about the difficulty observed.”\* During a task, ensure that your students understand and are comfortable by answering the questions that arise so that they will always be making progress. Highlight the strategies used by your students.

**Retroactive Regulation** involves reviewing completed tasks. It occurs at a suitable time in the competency development process, and allows the teacher to adjust his or her pedagogical approach on the basis of the difficulties observed.” \* Make adjustments for the next LES, if necessary, in light of your observations.

\* During a task, ensure that your students understand and are comfortable by answering the questions that arise so that they will always be making progress. Highlight the strategies used by your students.

## Regulation

“Regulation, whether proactive, interactive or retroactive, is intended to help students progress...” \*

**Proactive Regulation** “is based on observations made during previous learning and evaluation situations that are then used to direct future situations.” \* When you create a LES, always take into consideration the various learning styles, needs, and abilities of your students (flexibility, adaptation, modification).

**Interactive Regulation** is performed by a teacher during the lessons. Discussions provide students with immediate feedback and with information about the difficulty observed.”\* During a task, ensure that your students understand and are comfortable by answering the questions that arise so that they will always be making progress. Highlight the strategies used by your students.

**Retroactive Regulation** involves reviewing completed tasks. It occurs at a suitable time in the competency development process, and allows the teacher to adjust his or her pedagogical approach on the basis of the difficulties observed.” \* Make adjustments for the next LES, if necessary, in light of your observations.

\* During a task, ensure that your students understand and are comfortable by answering the questions that arise so that they will always be making progress. Highlight the strategies used by your students.

## Evaluation Tools

- Student Booklet
- Self-Evaluation Rubric Cross-curricular Competency
- Self-Evaluation Rubric Subject-specific Competencies
- Observation Charts
- Evaluation Criteria
- Questioning
- Interview

## Evaluation Tools

- Portfolio
- Anecdotal records
- Teacher’s Logbook

## Essential Question or Problem to Solve

As you continue to prepare for your work placements and for the trade you will soon work in, this LES introduces you to the various aspects of being an entrepreneur; specifically, the owner of a **mobile canteen**. You will have to make purchases and sales and make decisions. Do you think that mathematical knowledge is necessary to carry out some of the work tasks in this

## Subject-specific and Cross-Curricular Competencies

## Resources to Mobilize (Internal/External)

### Internal Resources

#### 1. Arithmetic

Number sense with regard to decimal and fractional notation and operation sense

Concepts	Processes
- Fractional, decimal notation; percentage	- Recognizing and using equivalent ways of writing numbers
- Rules for transforming	- Switching from one way of writing numbers to another

Operations involving numbers in decimal and fractional notation

Concepts	Processes
	- Estimating and rounding numbers in different situations
	- Looking for equivalent expressions
	- Approximating the result of an operation
	- Simplifying the terms of an operation
	- Mental computation

#### 2. Statistics

Concepts	Processes
- Reading graphs: bar graphs	- Constructing graphs

#### 3. Geometry

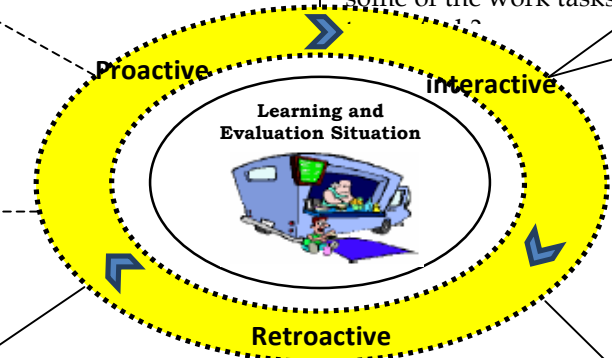
Concepts	Processes
	- Measuring volume

#### 4. Problem-Solving Strategies (See Appendix A)

5. Resources to mobilize for the subject-specific and cross-curricular competencies (see Appendix A: “Installing the Subject-specific Competencies that will be taught and evaluated” and “Installing the Cross-Curricular Competency that will be taught and evaluated.”)

### External Resources

- List of wholesale prices
- Reference documents (calculating taxes, transforming numbers)
- Taxable or non-taxable products
- Perishable and non-perishable goods
- Calculator
- Internet sites
- Mathematics text and workbooks
- Resource persons



## Sequence

- Competency 2:** Uses mathematical reasoning
- Activity y 1:** Taxable or Non-taxable (1 period)
- Activity 2:** A Question of Profit (1 period)
- Activity 3:** Storage Space Capacity (1 period)
- Competency 3:** Communicates using mathematical language
- Activity 4:** The Right Choice (1 period)
- Competency 1:** Solves a situational problem
- Activity 5:** My Mobile Canteen Small Business (4-5 periods)

## Pedagogical Differentiation

For students in Training for a Semiskilled Trade, see **Appendix P on Pedagogical Differentiation for this LES: Flexibility and Adaptation**

For students in Pre-work Training, see **Appendix P on Pedagogical Differentiation for this LES: Modification**

Documents required for this LES:

### **Important Note Regarding This LES**

In the appendices, you will find a companion guide (Appendix A (A-1, A-2, A-3, A-4)) for the phases of an LES (preparation, performance, integration), as well as a number of rubrics for the three key features of the subject-specific competency, *Solves a situational problem* (Appendices Q, R, S), and for the cross-curricular competency, *Cooperates with others*. (Appendix O). If this is the first time that you are working with the competencies in the mathematics program, it is not advisable to use all these rubrics. The first goal should be to develop the students' competencies before evaluating them. The self-evaluation rubrics for recording observable elements in the various competencies (Appendices B, G, K) will prove more useful.

If you choose to have your students work in groups, it is important to first develop the competency with the entire group, so that students themselves are able to bring out the observable elements (Appendix 2 “Developing the cross-curricular competency to be taught and evaluated”). You will find a self-evaluation rubric for the competency, *Cooperates with others*, in Appendix O. Choose the best moment to develop this competency with your students, since it is difficult to develop and observe two competencies at once. The cooperation competency could be highlighted at another time; for example, before doing the LES.

# Taxable or Non-taxable

Suggested Time: 75 to 90 minutes

## Competency 2: Uses mathematical reasoning



### Concepts and processes mobilized in this task

1. Arithmetic	
Number sense with regard to decimal and fractional notation and operation sense	
Concepts	Processes
<ul style="list-style-type: none"><li>Fractional, decimal notation; percentage</li></ul>	<ul style="list-style-type: none"><li>Recognizing and using equivalent ways of writing numbers</li></ul>
<ul style="list-style-type: none"><li>Rules for transforming</li></ul>	<ul style="list-style-type: none"><li>Switching from one way of writing numbers to another</li></ul>
Operations involving numbers in decimal and fractional notation	
	<ul style="list-style-type: none"><li>Estimating and rounding numbers in different situations</li></ul>
	<ul style="list-style-type: none"><li>Looking for equivalent expressions</li></ul>
	<ul style="list-style-type: none"><li>Approximating the result of an operation</li></ul>
	<ul style="list-style-type: none"><li>Simplifying the terms of an operation</li></ul>
	<ul style="list-style-type: none"><li>Mental Calculation</li></ul>

### Differentiation

See Appendix P

### Possible Extension Activity

# Taxable or Non-taxable

*The students prepare to build their knowledge and the teacher motivates them.*

See Appendix A-1		
Contextualization: starting point, “hook” or setting the stage	Clarification of Task →	Evaluation
<ul style="list-style-type: none"> <li>Presentation of the Broad Area of Learning (BAL)</li> </ul>	<ul style="list-style-type: none"> <li>“Possible Questions” (Appendix A-3)</li> </ul>	
<ul style="list-style-type: none"> <li>Presentation of the essential question or problem to solve</li> </ul>	<ul style="list-style-type: none"> <li>“Possible Questions” (Appendix A-3)</li> </ul>	
<ul style="list-style-type: none"> <li>Activation of prior knowledge and experience</li> <li>Set-up: group work</li> </ul>	<ul style="list-style-type: none"> <li>Create a mind map with the students</li> </ul>	

**Strategies for developing the subject-specific competencies that will be taught and evaluated.**

## Competency: Uses mathematical reasoning

The teacher ensures that the students understand what it means to be someone who is competent in “*uses mathematical reasoning*.”

If this is the first time that the teacher is working on this competency with the students, he or she must set up the competency, which means to bring out the observable elements for each criteria or key feature : See Appendices \*A-2 “Setting Up the Subject-Specific Competencies that will be Taught and Evaluated”

\*B Copy for the students

\*C Poster to put up in the classroom.

Return Appendix B and post Appendix C only after having completed items 1, 2 and 3 below.

Return the “Taxable or Non-Taxable” activity from the Student Resource.

1. Read the situational problem with the students (page 2 of the Student Guide) and check their understanding of the vocabulary used in the problem. You could even develop a visual aid (lexicon) for the more difficult words. (You could create a table in Word for your vocabulary chart which could be inserted into the document.) In the lexicon, you could write the correct definition and add the definitions given by the students. Allow the students to refer to the vocabulary chart as much as they wish.  
.
2. Question the students on the behaviours and actions of someone who would be competent in completing the task or in *using mathematical reasoning*.

Examples of questions to ask the students:

- What are the steps that a competent student will take to successfully complete a task like this one?
- Can you be more specific?
- Is there a step that comes before or after the step you just identified?
- How would you go about doing this task?
- ...

Tell the students that they will be evaluated on the observable elements just identified.

If this is not the first time that you are working on this competency with the students, simply remind them of what it means to be a student who has developed the competency “*uses mathematical reasoning*.”

3. Write the students’ answers on the board. (You could also use an interactive white board or multimedia projector.) The goal is always to guide them towards the elements already identified in Appendix B or C.
4. Return Appendix B to the students and post Appendix C.
5. Analyze the various parts of pages 3 and 4 of the Student Resource and make the links with the elements and actions of a competent student (Appendices B and C).



Observable Elements	Links to the Student Resource
I analyze and understand the task to be completed.	<div data-bbox="824 191 1404 296"> <div data-bbox="850 191 1377 222">What I know (the most important facts)</div> <div data-bbox="850 237 1404 296">What I want to prove (What I want to find out)</div> </div>
<div data-bbox="186 338 688 405">I choose the mathematical knowledge necessary to complete the task</div> <div data-bbox="186 422 716 489">I correctly apply (without errors) the mathematical knowledge I have chosen.</div> <div data-bbox="186 506 578 537">My work is clear and in order.</div>	<div data-bbox="824 359 1104 453"> <div data-bbox="850 394 1104 426">Show all your work</div> </div>
<div data-bbox="186 569 634 600">I justify my work and my solution.</div> <div data-bbox="186 621 217 653">or</div> <div data-bbox="186 674 516 705">I formulate a hypothesis.</div>	<div data-bbox="824 600 1308 684"> <div data-bbox="850 621 1308 653">Conclusions from your calculations</div> </div>

*The students build their knowledge and the teacher guides them.*

Contextualization	Clarification of Task	Evaluation
<ul style="list-style-type: none"> <li>“Supporting the Second Phase of a Learning and Evaluation Situation” (Appendix A-3)</li> <li>Set-up: whole-class, individual, or group work</li> </ul>	<ul style="list-style-type: none"> <li>“Possible Questions” (Appendix A-3)</li> <li>Pages 3 and 4 of the Student Guide</li> <li>“STRATEGIES Employed in Mathematics that Students Can Learn to Use When Exercising Their Competencies” (Appendix A-4)</li> </ul>	<ul style="list-style-type: none"> <li>Interactive Regulation (Appendix A-3)</li> <li>Observations, questioning</li> <li>Observation Grid for Competency 2 (Appendix E)</li> <li>Lead pencil, green pencil and one other colour (See no. 6 below).</li> <li>N.B. Pay attention to the students’ awakening understanding and to their stumbling blocks and difficulties!</li> </ul>

6. Lead the group for this section: “Analyze the Situation.” (Page 3 in the Student Resource) What I know ... (The most important facts)

1<sup>st</sup> Ask the students to identify **all the essential facts** on page 2 of the Student Guide and to record them with a pencil or in the computer file under “What I know...”

Give the students sufficient time to complete this step on their own.

2<sup>nd</sup> Ask the students to compare their data with that of a classmate and to record **any data they missed** with a green pencil or by changing the colour of the characters to green if working on the computer.

3<sup>rd</sup> Working with the whole class, ask the students to name all the essential data of the situational problem. **If some important facts were missed**, have the students add them using a third colour (for example, blue).

In this way, the teacher can identify which students have strengths or challenges in regards to the criteria “Proper implementation of mathematical reasoning suited to the situation” and also in regards to the observable element “I analyze and understand the task to be completed.”

7. Question the students in order to complete the section “What I want to prove.” Alternatively, you could have the students do this individually and then review with the entire group to ensure that they have understood the task.

8. The students complete the “Show All Your Work” section (page 4 of the Student Resource). Point out to the students that the text bubbles that appear in their booklet throughout the learning and evaluation situation are linked to the actions they must undertake to become competent.

**Attention:** Refer to Appendix D for specifics on taxable and non-taxable goods.

**Note:** The teacher can help the students (questions, clarifications, guidance) throughout the LES and then take this into account during the students’ self-evaluation and evaluation.

## Integration

*The students take stock of their new knowledge and the teacher acts as trainer*

Orally		
Transfer of Knowledge	Clarification of Task	Evaluation
<ul style="list-style-type: none"> <li>Supporting the Integration Phase of a Learning and Evaluation Situation" (Appendix A-3)</li> <li>Elements: whole-class work and interview</li> </ul>	<ul style="list-style-type: none"> <li>"Possible Questions" (Appendix A-3)</li> <li>"STRATEGIES Employed in Mathematics that Students Can Learn to Use When Exercising Their Competencies" (Appendix A-4)</li> </ul>	<ul style="list-style-type: none"> <li>"Interactive Regulation" (Appendix A-3)</li> <li>Observations, questioning</li> <li>Student responses</li> <li>Self-Evaluation Rubric for Competency 2 (Appendix F)</li> <li>Student Resource</li> <li>Rubric for Competency 2 (Appendix E)</li> <li>Interview, if necessary</li> <li>Descriptive Scale (Appendix Q)</li> </ul>

Have the students present their results individually or in teams. Ensure that the students realize that some strategies are more efficient (economical and effective) than others, and that there are different ways to find the solution.

This important step gives the students the opportunity to discuss the various strategies used.

**Ask the students:**

- ❖ what they learned,
- ❖ what they found difficult or easy,
- ❖ what they can transfer or re-use in other situations.

**Note:**

Keep the first task so that you can compile all the tasks in the LES (situations for competencies 1, 2, and 3).

# A Question of Profit

Suggested Time: 75 to 90 minutes

Competency 2: Uses mathematical reasoning



Concepts and processes mobilized in this task

1. Arithmetic	
Number sense with regard to decimal and fractional notation and operation sense	
Concepts	Processes
<ul style="list-style-type: none"><li>Fractional, decimal notation; percentage</li></ul>	<ul style="list-style-type: none"><li>Reconnaissance et production d'écritures équivalentes</li></ul>
<ul style="list-style-type: none"><li>Rules for transforming</li></ul>	<ul style="list-style-type: none"><li>Passage d'une forme d'écriture à une autre</li></ul>
Operations involving numbers in decimal and fractional notation	
	<ul style="list-style-type: none"><li>Estimating and rounding numbers in different situations</li></ul>
	<ul style="list-style-type: none"><li>Looking for equivalent expressions</li></ul>
	<ul style="list-style-type: none"><li>Approximating the result of an operation</li></ul>
	<ul style="list-style-type: none"><li>Simplifying the terms of an operation</li></ul>
	<ul style="list-style-type: none"><li>Mental Calculation</li></ul>

## Differentiation

See Appendix P

## Possible Extension Activities

In which month did Mr. Smith make the most profit? Give your answer as a percentage.

How much do sales in the last quarter have to add up to so that Mr. Smith makes a 40% profit?

# A Question of Profit

*The students prepare to build their knowledge and the teacher motivates them.*

See Appendix A-2		
Contextualization: starting point, “hook” or setting the stage	Clarification of Task	Evaluation
<ul style="list-style-type: none"> <li>Activation of prior knowledge and experience</li> <li>Set-up: Group work</li> </ul>	<ul style="list-style-type: none"> <li>Verify the mind map and complete it as necessary</li> </ul>	

Strategies for developing the subject-specific competencies that will be taught and evaluated.

**Competency: Uses mathematical reasoning**

The teacher reviews the observable elements of the competency “Uses mathematical reasoning.” (See Appendices B and C)

The teacher informs the students that they will evaluate themselves on certain criteria of the competency. (He/she identifies one or two criteria that he/she deems relevant.)

The teacher may use the observation rubric in Appendix E to note information regarding certain students. This rubric could also be used in the other tasks for Competency 2: “Uses mathematical reasoning.”

1. Read the situational problem with the students (page 5 of the Student Resource) and check their understanding of the vocabulary used in the problem. You could even develop a visual aid (lexicon) for the most difficult words. (You could create a table in Word for your vocabulary chart which could be inserted into the document.) In the lexicon, you could write the correct definition and add the definitions given by the students. Allow the students to refer to the vocabulary chart as much as they wish.
2. Analyze the different parts of page 6 of the Student Resource and make links to the habits of a competent student (Appendices B and C).

Observable Elements	Links to the Student Resource
<p>I analyze and understand the task to be completed.</p>	<p>What I know (the most important facts)  What I want to prove (What I want to find out)</p>
<p>I choose the mathematical knowledge necessary to complete the task.  I correctly apply (without errors) the mathematical knowledge I have chosen.  My work is clear and in order.</p>	<p>Show all your work</p>
<p>I justify my work and my solution.  or  I formulate a hypothesis.</p>	<p>Conclusions from your calculations</p>

*The students build their knowledge and the teacher guides them.*

Contextualization	Clarification of Task	Evaluation
<ul style="list-style-type: none"> <li>“Supporting the Second Phase of a Learning and Evaluation Situation” (Appendix A-3)</li> <li>Set-up: Group work</li> </ul>	<ul style="list-style-type: none"> <li>“Possible Questions » (Appendix A-3)</li> <li>Page 6 of the Student Resource</li> <li>“STRATEGIES Employed in Mathematics that Students Can Learn to Use When Exercising Their Competencies” (Appendix A-4)</li> </ul>	<ul style="list-style-type: none"> <li>“ Interactive Regulation interactive” - (Appendix A-3)</li> <li>Observations, questioning</li> <li>Observation Grid for Competency 2 (Appendix E)</li> <li>Lead pencil, green pencil and one other colour (See no. 3 below.)</li> <li>N.B. Pay attention to the students’ awakening understanding and to their stumbling blocks and difficulties!</li> </ul>

3. Lead the group for this section: “Analyze the Situation.” (Page 6 in the Student Resource) What I know ... (The most important facts)

1<sup>st</sup> Ask the students to identify **all the essential facts** on page 2 of the Student Guide and to record them with a pencil or in the computer file under “What I know...”

Give the students sufficient time to complete this step on their own.

2<sup>nd</sup> Ask the students to compare their data with that of a classmate and to record **any data they missed** with a green pencil or by changing the colour of the characters to green if working on the computer.

3<sup>rd</sup> Working with the whole class, ask the students to name all the essential data of the situational problem. **If some important facts were missed**, have the students add them using a third colour (for example, blue).

In this way, the teacher can identify which students have strengths or challenges in regards to the criteria “Proper implementation of mathematical reasoning continued to the situation” and also in regards to the observable element “I analyze and understand the task to be completed.”

4. Question the students in order to complete the section “What I want to prove.” Alternatively, you could have the students do this individually and then review with the entire group to ensure that they have understood the task.

5. The students complete the “Show All Your Work” section (page 4 of the Student Resource).

Point out to the students that the text bubbles that appear in their booklet throughout the learning and evaluation situation are linked to the actions they must undertake to become competent.

**Note:** The teacher can help the students (questions, clarifications, guidance) throughout the LES and then take this into account during the students’ self-evaluation and evaluation.

More students should have developed a degree of independence in the process to be undertaken.

The chart on page 5 of the Student Resource can be made using a spreadsheet. The students could then learn to use the formulas for addition and subtraction.



*The students take stock of their new knowledge and the teacher acts as trainer.*

Orally or Written		
Transfer of Knowledge	Clarification of Task	Evaluation
<ul style="list-style-type: none"> <li>• “Supporting the Integration Phase of a Learning and Evaluation Situation” (Appendix A-3)</li> <li>• Set-up: group or individual work and interview</li> </ul>	<ul style="list-style-type: none"> <li>• “Possible Questions” - (Appendix A-3)</li> <li>• “STRATEGIES Employed in Mathematics that Students Can Learn to Use When Exercising Their Competencies” (Appendix A-4)</li> </ul>	<ul style="list-style-type: none"> <li>• “Retroactive Regulation” - (Appendix A-3)</li> <li>• Observations, questioning, review</li> <li>• Students’ answers</li> <li>• Self-Evaluation Rubric for Competency 2 (Appendix F)</li> <li>• Student Resource</li> <li>• Grille d’observation de la Competency 2 (Appendix E)</li> <li>• Interview, if necessary</li> <li>• Descriptive Scale (Appendix Q)</li> </ul>

Have the students present their results individually or in teams. Ensure that the students realize that some strategies are more efficient (economical and effective) than others, and that there are different ways to find the solution.

This important step gives the students the opportunity to discuss the various strategies used.

**Ask the students:**

- ❖ what they learned;
- ❖ what they found difficult or easy;
- ❖ what they can transfer or re-use in other situations;
- ❖ what they now better understand regarding the first activity, “Taxable or Non-taxable.”

# Storage Space Capacity

Suggested Time: 75 to 90 minutes

## Competency 2: Uses mathematical reasoning



### Concepts and processes mobilized in this task

<b>1. Arithmetic</b>	
<b>Number sense with regard to decimal and fractional notation and operation sense</b>	
<b>Concepts</b>	<b>Processes</b>
<ul style="list-style-type: none"> <li>Fractional, decimal notation; percentage</li> </ul>	<ul style="list-style-type: none"> <li>Recognizing and using equivalent ways of writing numbers</li> </ul>
<ul style="list-style-type: none"> <li>Rules for transforming</li> </ul>	<ul style="list-style-type: none"> <li>Switching from one way of writing numbers to another</li> </ul>
<b>Operations involving numbers in decimal and fractional notation</b>	
	<ul style="list-style-type: none"> <li>Estimating and rounding numbers in different situations</li> </ul>
	<ul style="list-style-type: none"> <li>Looking for equivalent expressions</li> </ul>
	<ul style="list-style-type: none"> <li>Approximating the result of an operation</li> </ul>
	<ul style="list-style-type: none"> <li>Simplifying the terms of an operation</li> </ul>
	<ul style="list-style-type: none"> <li>Mental calculation</li> </ul>
<b>2. Geometry</b>	
	<ul style="list-style-type: none"> <li>Measuring volume</li> </ul>

### Differentiation

See Appendix P

### Possible Extension Activity

The new truck has more overall storage capacity than the old one. Which compartment in the new truck has the biggest increase in storage capacity?

# Storage Space Capacity

*The students prepare to build their knowledge and the teacher motivates them.*

See Appendix A-1		
Contextualization: starting point, “hook” or setting the stage	Clarification of Task	Evaluation
<ul style="list-style-type: none"> <li>Activating prior knowledge and experience</li> <li>Set-up: group work</li> </ul>	<ul style="list-style-type: none"> <li>Verify the mind map and complete it as necessary</li> </ul>	

**Strategies for developing the subject-specific competencies that will be taught and evaluated.**

**Competency: Uses mathematical reasoning**

The teacher reviews the observable elements of the competency “Uses mathematical reasoning.” (See Appendices B and C)

The teacher informs the students that they will evaluate themselves on certain criteria of the competency. (He/she identifies one or two criteria that he/she deems relevant.)

The teacher may use the observation rubric in Appendix E to note information regarding certain students. This rubric could also be used in the other tasks for Competency 2: “Uses mathematical reasoning.”

1. Read the situational problem with the students (page 7 of the Student Resource) and check their understanding of the vocabulary used in the problem. You could even develop a visual aid (lexicon) for the more difficult words. (You could create a table in Word for your vocabulary chart which could be inserted into the document.) In the lexicon, you could write the correct definition and add the definitions given by the students. Allow the students to refer to the vocabulary chart as much as they wish.
2. Analyze the different parts of pages 8 and 9 of the Student Resource and make links to the habits of a competent student (Appendices B and C).

Observable Elements	Links to the Student Resource
I analyze and understand the task to be completed.	<div data-bbox="828 262 1408 380"> <div data-bbox="828 262 1408 304">What I know (the most important facts)</div> <div data-bbox="828 304 1408 380">What I want to prove (What I want to find out)</div> </div>
I choose the mathematical knowledge necessary to complete the task. I correctly apply (without errors) the mathematical knowledge I have chosen. My work is clear and in order.	<div data-bbox="828 468 1105 506">Show all your work</div>
I justify my work and my solution. or I formulate a hypothesis.	<div data-bbox="828 693 1310 730">Conclusions from your calculations</div>

*The students build their knowledge and the teacher guides them.*

Contextualization	Clarification of Task	Evaluation
<ul style="list-style-type: none"> <li>“Supporting the Second Phase of a Learning and Evaluation Situation” (Appendix A-3)</li> <li>Set-up: whole-class, individual, and group work</li> </ul>	<ul style="list-style-type: none"> <li>“Possible Questions” (Appendix A-3)</li> <li>Pages 8 and 9 of the Student Resource</li> <li>“STRATEGIES Employed in Mathematics that Students Can Learn to Use When Exercising Their Competencies” (Appendix A-4)</li> </ul>	<ul style="list-style-type: none"> <li>“Interactive Regulation” (Appendix A-3)</li> <li>Observations, questioning</li> <li>Observation Rubric Competency 2 (Appendix E)</li> <li>Lead pencil, green pencil and one other colour (See no. 3 below)</li> <li>N.B. Pay attention to the students’ awakening understanding and to their stumbling blocks and difficulties!</li> </ul>

3. Lead the group for this section: “Analyze the Situation.” (Page 8 in the Student Resource) What I know ... (The most important facts)

1<sup>st</sup> Ask the students to identify **all the essential facts** on page 7 of the Student Guide and to record them with a pencil or in the computer file under “What I know...”

Give the students sufficient time to complete this step on their own.

2<sup>nd</sup> Ask the students to compare their data with that of a classmate and to record **any data they missed** with a green pencil or by changing the colour of the characters to green if working on the computer.

3<sup>rd</sup> Working with the whole class, ask the students to name all the essential data of the situational problem. **If some important facts were missed**, have the students add them using a third colour (for example, blue).

In this way, the teacher can identify which students have strengths or challenges in regards to the criteria “Proper implementation of mathematical reasoning suited to the situation” and also in regards to the observable element “I analyze and understand the task to be completed.”

4. Question the students in order to complete the section “What I want to prove.” Alternatively, you could have the students do this individually and then review with the entire group to ensure that they have understood the task.

5. The students complete the “Show All Your Work” section (page 9 of the Student Resource).

Point out to the students that the text bubbles that appear in their booklet throughout the learning and evaluation situation are linked to the actions they must undertake to become competent.

**Note:** The teacher can help the students (questions, clarifications, guidance) throughout the LES and then take this into account during the students’ self-evaluation and evaluation.

Since this is the third problem of the same type that the students have worked on, some students might now be more independent in undertaking the process.

*The students take stock of their new knowledge and the teacher acts as trainer.*

Orally or Written		
Transfer of Knowledge	Clarification of Task	Evaluation
<ul style="list-style-type: none"> <li>• “Supporting the Integration Phase of a Learning and Evaluation Situation” (Appendix A-3)</li> <li>• Set-up: group work and interview</li> </ul>	<ul style="list-style-type: none"> <li>• “Possible Questions” (Appendix A-3)</li> <li>• “STRATEGIES Employed in Mathematics that Students Can Learn to Use When Exercising Their Competencies” (Appendix A-4)</li> </ul>	<ul style="list-style-type: none"> <li>• “Retroactive Regulation” (Appendix A-3)</li> <li>• Observations, questioning, review</li> <li>• Students’ answers</li> <li>• Self-Evaluation Rubric for Competency 2 (Appendix F)</li> <li>• Student Resource</li> <li>• Rubric for Competency 2 (Appendix E)</li> <li>• Interview, if necessary</li> <li>• Descriptive Scale (Appendix Q)</li> </ul>

Have the students present their results individually or in teams. Ensure that the students realize that some strategies are more efficient (economical and effective) than others, and that there are different ways to find the solution.

This important step gives the students the opportunity to discuss the various strategies used.

**Ask the students:**

- ❖ what they learned,
- ❖ what they found difficult or easy,
- ❖ what they can transfer or re-use in other situations,
- ❖ what they now better understand regarding the first two activities.

# The Right Choice

Suggested Time: 75 to 90 minutes

Competency 3: Communicates using mathematical language



Concepts and processes mobilized in this task

2. Statistics	
Number sense with regard to decimal and fractional notation and operation sense	
Concepts	Processes
<ul style="list-style-type: none"><li>Reading graphs: bar graphs</li></ul>	<ul style="list-style-type: none"><li>Constructing graphs</li></ul>

## Differentiation

See Appendix P

## Possible Extension Activity

Show the results using a broken-line graph or a circle graph either with or without using spreadsheet software.



# The Right Choice

*The students prepare to build their knowledge and the teacher motivates them.*

See Appendix A-1		
Contextualization: starting point, “hook” or setting the stage	Clarification of Task	→ Evaluation
<ul style="list-style-type: none"> <li>Activation of prior knowledge and experience</li> <li>Set-up: group work</li> </ul>	<ul style="list-style-type: none"> <li>Verify the mind map and complete it as necessary.</li> </ul>	

**Strategies for developing the subject-specific competencies that will be taught and evaluated.**

**Competency: Communicates by using mathematical language**

The teacher ensures that the students understand what it means to be someone who is competent in “*communicates by using mathematical language.*”

If this is the first time that the teacher is working on this competency with the students, he or she must set up the competency, which means to bring out the observable elements for each criteria or key feature : See Appendices \*A-2 Setting Up the Subject-Specific Competencies that will be Taught and Evaluated

\*G Copy for the students

\*H Poster to put up in the classroom.

Return Appendix G and post Appendix H only after having completed items 1, 2 and 3 below.

1. Read the situational problem with the students (page 10 of the Student Resource) and check their understanding of the vocabulary used in the problem. You could even develop a visual aid (lexicon) for the more difficult words. (You could create a table in Word for your vocabulary chart which could be inserted into the document.) In the lexicon, you could write the correct definition and add the definitions given by the students. Allow the students to refer to the vocabulary chart as much as they wish.
2. Question the students on the behaviours and actions of someone who would be competent in completing the task or in *communicates using mathematical language.*

Examples of questions to ask the students:

- ❖ What are the steps that a competent student will take to successfully complete a task like this one?
- ❖ Can you be more specific?
- ❖ Is there a step that comes before or after the step you just identified?
- ❖ How would you go about doing this task?
- ❖ etc.

If this is not the first time that you are working on this competency with the students, simply remind them of what it means to be a student who has developed the competency “*communicates using mathematical language.*”

Tell the students that they will be evaluated on the observable elements just identified.

3. Write the students’ answers on the board. (You could also use an interactive white board or multimedia projector.) The goal is always to guide them towards the elements already identified in Appendices G and H.

4. Return Appendix G to the students and post Appendix H.

5. Analyze the various parts of pages 10 and 11 of the Student Resource and make the links with the behaviours and actions of a competent student (Appendices G and H).

Observable Elements	Links with the Student Resource
I am able to re-state a mathematical message in my own words or by using other mathematical language.	<div style="display: flex; align-items: center;"> <div style="border-left: 1px solid black; padding-left: 10px; margin-right: 10px;"> What I know What I want to prove </div> </div>
I identify the appropriate data and draw out the correct information from an element of mathematical language.	
I organize my ideas and develop a communication plan.	<div style="display: flex; align-items: center;"> <div style="border-left: 1px solid black; padding-left: 10px; margin-right: 10px;"> Show all your work Justify your results </div> </div>
I choose the mathematical language appropriate to the mathematical message I want to communicate.	

*The students build their knowledge and the teacher guides them.*

Contextualization	→ Clarification of Task	→ Evaluation
<ul style="list-style-type: none"> <li>• “Supporting the Second Phase of a Learning and Evaluation Situation” (Appendix A-3)</li> <li>• Set-up: whole-class, individual or group work</li> </ul>	<ul style="list-style-type: none"> <li>• “Possible Questions” (Appendix A-3)</li> <li>• Pages 10 and 11 of the Student Resource</li> <li>• “STRATEGIES Employed in Mathematics that Students Can Learn to Use When Exercising Their Competencies” (Appendix A-4)</li> </ul>	<ul style="list-style-type: none"> <li>• “Interactive Regulation” (Appendix A-3)</li> <li>• Observations, questioning</li> <li>• Observation Rubric Competency 3 (Appendix I)</li> <li>• Lead pencil and a green pencil and one other colour (See no. 6 below)</li> <li>• N.B. Pay attention to the students’ awakening understanding and to their stumbling blocks and difficulties!</li> </ul>

6. Lead the group for this section: “Analyze the Situation.” (Page 10 in the Student Resource) What I know ... (The most important facts)

1<sup>st</sup> Ask the students to identify **all the essential facts** on page 10 of the Student Guide and to record them with a pencil or in the computer file under “What I know...”

Give the students sufficient time to complete this step on their own.

2<sup>nd</sup> Ask the students to compare their data with that of a classmate and to record **any data they missed** with a green pencil or by changing the colour of the characters to green if working on the computer.

3<sup>rd</sup> Working with the whole class, ask the students to name all the essential data of the situational problem. **If some important facts were missed**, have the students add them using a third colour (for example, blue).

In this way, the teacher can identify which students have strengths or challenges in regards to the criteria “Correct interpretation of a mathematical message” and also in regards to the observable elements “I am able to re-state a mathematical message...” and “I identify the appropriate data and draw out...”

7. Question the students in order to complete the section “What I want to prove.” Alternatively, you could have the students do this individually and then review with the entire group to ensure that they have understood the task.

8. The students complete the “Show All Your Work” section (page 11 of the Student Resource).

Point out to the students that the text bubbles that appear in their booklet throughout the learning and evaluation situation are linked to the actions they must undertake to become competent.

**Note:** The teacher can help the students (questions, clarifications, guidance) throughout the LES and then take this into account during the students’ self-evaluation and evaluation.

*The students take stock of their new knowledge and the teacher acts as trainer.*

Orally or Written		
Transfer of Knowledge	→ Clarification of Task	→ Evaluation
<ul style="list-style-type: none"> <li>• “Supporting the Integration Phase of a Learning and Evaluation Situation” (Appendix A-3)</li> <li>• Set-up : group work and interview</li> </ul>	<ul style="list-style-type: none"> <li>• “Possible Questions” (Appendix A-3)</li> <li>• “STRATEGIES Employed in Mathematics that Students Can Learn to Use When Exercising Their Competencies” (Appendix A-4)</li> </ul>	<ul style="list-style-type: none"> <li>• “Retroactive Regulation” (Appendix A-3)</li> <li>• Observations, questioning, review</li> <li>• Students’ answers</li> <li>• Self-Evaluation Rubric for Competency 3 (Appendix J)</li> <li>• Student Resource</li> <li>• Rubric for Competency 3 (Appendix I)</li> <li>• Interview, if necessary</li> <li>• Descriptive Scale (Appendix R)</li> </ul>

Have the students present their results individually or in teams. Ensure that the students realize that some strategies are more efficient (economical and effective) than others, and that there are different ways to find the solution.

This important step gives the students the opportunity to discuss the various strategies used.

**Ask the students:**

- ❖ what they learned,
- ❖ what they found difficult or easy,
- ❖ what they can transfer or re-use in other situations.

# My Mobile Canteen Small Business

Suggested Time: 4 to 5, 75-minute periods

Competency 1: Solves a situational problem



Concepts and processes mobilized in this task

1. Arithmetic	
Number sense with regard to decimal and fractional notation and operation sense	
Concepts	Processes
<ul style="list-style-type: none"> <li>Fractional, decimal notation; percentage</li> </ul>	<ul style="list-style-type: none"> <li>Recognizing and using equivalent ways of writing numbers</li> </ul>
<ul style="list-style-type: none"> <li>Rules for transforming</li> </ul>	<ul style="list-style-type: none"> <li>Switching from one way of writing numbers to another</li> </ul>
Operations involving numbers written in decimal and fractional notation	
	<ul style="list-style-type: none"> <li>Estimating and rounding numbers in different situations</li> </ul>
	<ul style="list-style-type: none"> <li>Looking for equivalent expressions</li> </ul>
	<ul style="list-style-type: none"> <li>Approximating the results of an operation</li> </ul>
	<ul style="list-style-type: none"> <li>Simplifying the terms of an operation</li> </ul>
	<ul style="list-style-type: none"> <li>Mental computation</li> </ul>
2. Statistics	
<ul style="list-style-type: none"> <li>Reading graphs: bar graphs</li> </ul>	<ul style="list-style-type: none"> <li>Constructing graphs</li> </ul>

## Differentiation

See Appendix P

## Possible Extension Activity

# My Mobile Canteen Small Business

*The students prepare to build their knowledge and the teacher motivates them.*

See Appendix A-1 and A-2		
Contextualization: starting point, “hook” or setting the stage:	→ Clarification of Task	→ Evaluation
<ul style="list-style-type: none"> <li>Activation of prior knowledge and experiences</li> <li>Set-up: group work</li> </ul>	<ul style="list-style-type: none"> <li>Verify the mind map and complete as necessary.</li> </ul>	

Strategies for developing the subject-specific competencies that will be taught and evaluated

**Competency: Solves a situational problem**

The teacher ensures that the students understand what it means to be someone who is competent in “*solves a situational problem.*”

If this is the first time that the teacher is working on this competency with the students, he or she must set up the competency, which means to bring out the observable elements for each criteria or key feature: See Appendices K (student copy) and L (poster to put up in the classroom). Return Appendix K and post Appendix L only after having completed items 1, 2 and 3 below.

1. Read the situational problem with the students (page 13 of the Student Resource) and check their understanding of the vocabulary used in the problem. You could even develop a visual aid (lexicon) for the more difficult words. (You could create a table in Word for your vocabulary chart which could be inserted into the document.) In the lexicon, you could write the correct definition and add the definitions given by the students. Allow the students to refer to the vocabulary chart as much as they wish.

2. Question the students on the behaviours and actions of someone who would be competent in completing the task or in *solves a situational problem*.

Examples of questions to ask the students:

- ❖ What are the steps that a competent student will take to successfully complete a task like this one?
- ❖ Can you be more specific?
- ❖ Is there a step that comes before or after the step you just identified?
- ❖ How would you go about doing this task?
- ❖ etc.

If this is not the first time that you are working on this competency with the students, simply remind them of what it means to be a student who has developed the competency “*solves a situational problem*.”

Tell the students that they will be evaluated on the observable elements just identified.

3. Write the students’ answers on the board. (You could also use an interactive white board or multimedia projector.) The goal is always to guide them towards the elements already identified in Appendices K and L.
4. Return Appendix K to the students and post Appendix L.
5. Return the Student Resource and read the introduction on page 13 as a group.
6. Analyze the various parts of pages 14, 15, 16, and 17 of the Student Resource and make the links with the elements and actions of a competent student (Appendices K and L).



Observable Elements	Links with the Student Resource
<p>I identify the essential information necessary to solve the mathematical situational problem. —————&gt;</p> <p>I identify the task to be completed. —————&gt;</p>	<p>What I know (the most important facts)</p> <p>What I want to prove</p>
<p>I use the appropriate mathematical knowledge to solve the situational problem.</p> <p>I provide correct results by revising my work.</p> <p>I show all my work.</p> <p>I make sure that my work is clear.</p>	<p>Show all your work</p> <p>Business plan</p>

*The students build their knowledge and the teacher guides them.*

Contextualisation	→ Clarification of Task	→ Evaluation
<ul style="list-style-type: none"> <li>“Support for the Second Phase of an LES” (Appendix A-3)</li> <li>Set-up : whole-class, individual or group work</li> </ul>	<ul style="list-style-type: none"> <li>“Possible Questions” (Appendix A-3)</li> <li>Pages 14 to 17 of the Student Resource</li> <li>“STRATEGIES Employed in Mathematics that Students Can Learn to Use When Exercising Their Competencies” (Appendix A-4)</li> </ul>	<ul style="list-style-type: none"> <li>“ Interactive Regulation” (Appendix A-3)</li> <li>Observations, questioning</li> <li>Observation Chart for Competency 1 (Appendix M)</li> <li>Lead pencil and a green pencil and one other colour (See no. 7 below)</li> <li>Self-Evaluation Rubric for Competency 1 (Appendix N)</li> <li>N.B. Pay attention to the students’ awakening understanding and to their stumbling blocks and difficulties!</li> </ul>

7. Lead the group for this section: “Analyze the situation.” (Page 14 in the Student Resource) What I know ... (The most important facts)

1<sup>st</sup> Ask the students to identify **all the essential facts on page 13** of the Student Guide and to record them with a pencil or in the computer file under “What I know...”

Give the students sufficient time to complete this step on their own.

2<sup>nd</sup> Ask the students to compare their data with that of a classmate and to record **any data they missed** with a green pencil or by changing the colour of the characters to green if working on the computer.

3<sup>rd</sup> Working with the whole class, ask the students to name all the essential data of the situational problem. **If some important facts were missed**, have the students add them using a third colour (for example, blue).

In this way, the teacher can identify which students have strengths or challenges in regards to the criteria, “Oral or written explanation showing that the student understands the situational problem,” and also in regards to the observable element, “I identify the task to be completed.”

8. Question the students in order to complete the section “What I want to prove.” Alternatively, you could have the students do this individually and then review with the entire group to ensure that they have understood the task.

9. The students complete the “Show All Your Work” section (pages 15, 16, and 17 of the Student Resource).

Point out to the students that the text bubbles that appear in their booklet throughout the learning and evaluation situation are linked to the actions they must undertake to become competent.

**Note:** The teacher can help the students (questions, clarifications, guidance) throughout the LES and then take this into account during the students’ self-evaluation and evaluation.

*The students take stock of their new knowledge and the teacher acts as trainer.*

Orally or Written		
Transfer of Knowledge	→ Clarification of Task	→ Evaluation
<ul style="list-style-type: none"> <li>• “Supporting the Integration Phase of a Learning and Evaluation Situation” (Appendix A-3)</li> <li>• Set-up : group work and interview</li> </ul>	<ul style="list-style-type: none"> <li>• “Possible Questions” (Appendix A-3)</li> <li>• “STRATEGIES Employed in Mathematics that Students Can Learn to Use When Exercising Their Competencies” (Appendix A-4)</li> </ul>	<ul style="list-style-type: none"> <li>• “Retroactive Regulation” (Appendix A-3)</li> <li>• Observations, questioning, review</li> <li>• Students’ answers</li> <li>• Self-Evaluation Rubric for Competency 1 (Appendix N)</li> <li>• Student Resource</li> <li>• Evaluation Rubric for Competency 1 (Appendix M)</li> <li>• Interview, if necessary</li> <li>• Descriptive Scale (Appendix S)</li> </ul>

Have the students present their results individually or in teams. Ensure that the students realize that some strategies are more efficient (economical and effective) than others, and that there are different ways to find the solution.

This important step gives the students the opportunity to discuss the various strategies used.

**Ask the students:**

- ❖ what they learned,
- ❖ what they found difficult or easy,
- ❖ what they can transfer or re-use in other situations.

Hand out Appendix N (Self-Evaluation) and have the students complete it.

**Note:** The students evaluate themselves using the subject competency rubric (Appendix N) and the cross-curricular competency rubric (Appendix O) if this is not the first time that they have worked on this competency and they know the various Observable Elements very well. **If not**, the students should do the self-evaluation task in a subsequent LES. What is important is to ensure that the students’ level of competency has been well-developed before evaluating them.

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# My Mobile Canteen, Small Business

## Appendices

*Observation Charts*  
*Self-Evaluation Rubrics*  
*Evaluation Rubrics*

### Note:

All the learning and evaluation tools necessary for the three competencies in Mathematics are provided in the appendices. Teachers should **choose** the most relevant tools according to the needs and level of progress of their students. However, we have chosen to include all of them since they can be used throughout the two years of Cycle One and for other LES in Mathematics.

"Do we have to use every  
ingredient in the  
refrigerator every time we make a  
recipe? »



## List of Appendices

Supporting the Phases of a LES .....	Appendix A (A-1, A-2, A-3, A-4)
Competency 2 (8 $\frac{1}{2}$ X 11).....	Appendix B
Competency 2 (11 X 17).....	Appendix C
Characteristics of the GST and the PST .....	Appendix D
Observation Chart Competency 2.....	Appendix E
Self-Evaluation Rubric Competency 2 .....	Appendix F
Competency 3 (8 $\frac{1}{2}$ X 11).....	Appendix G
Competency 3 (11 X 17).....	Appendix H
Observation Chart Competency 3.....	Appendix I
Self-Evaluation Rubric Competency 3 .....	Appendix J
Competency 1 (8 $\frac{1}{2}$ X 11).....	Appendix K
Competency 1 (11 X 17).....	Appendix L
Observation Chart Competency 1 .....	Appendix M
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Co-evaluation Rubric Cooperates with others .....	Appendix O
Pedagogical Differentiation .....	Appendix P
Rubric for Competency 2.....	Appendix Q
Rubric for Competency 3.....	Appendix R
Rubric for Competency 1.....	Appendix S
Cultural References .....	Appendix T

### SUPPORTING THE PREPARATION PHASE OF A LES



During this stage, motivation talks hold.

#### Introducing the BAL

Throughout this LES, the students are preparing themselves to integrate into the workforce and society. They will be faced with a realistic work situation in which they will be called upon to solve a situational problem and carry out some of the principal tasks associated with a specific trade. The **Career Planning and Entrepreneurship** Broad Area of Learning will help make the links to knowledge of the world of work, social roles, and trades and professions.

#### Possible Questions

### PREPARATION PHASE (continued)

#### Introducing the Essential Question/Problem



As you continue to prepare for your work placements and for the trade you will soon work in, this LES introduces you to the various aspects of being an entrepreneur; specifically, the owner of a **mobile canteen**. You will have to make purchases and sales and make decisions.

Do you think that mathematical knowledge is necessary when performing some of the work tasks in this type of job?

#### Possible Questions

- How can mathematics be useful to you?
- Have you ever done anything similar?
- What is similar or different or new in this situation?
- What mathematical knowledge (concepts, processes, and strategies) and what social skills (cross-curricular competencies) are required to solve this situational problem?
- What appears to be the simplest thing and the most difficult thing to do?
- Do you have any other questions?

**With the students, complete a mind map for exploring ideas.**



This map should be completed before and after

You will soon be on the workforce.


- Do you have an idea of what trade(s) interest you?
- Do you know what you will have to know how to do in order to reach your goal (subject-specific competencies and cross-curricular competencies)?
- Can you learn these skills here and now in school?

every activity in the LES. It will enable the students to visualize all the concepts and processes that will be put to use throughout this Learning and Evaluation Situation. Make the map on a large piece of cardboard or bristol board and place it where the entire class can see it. It will also be useful for regulation.



<b>PREPARATION PHASE</b> (continued)	<b>PREPARATION PHASE</b> (continued)
 <p><b>Developing the subject-specific competencies that will be taught and evaluated.</b></p> <p>Question the students about the Key Features of the competency so that they can name the observable elements and know-how they will have to acquire and develop and on which they will be evaluated.</p>	
<b>Solves a situational problem (C1)</b>	<p><b>Developing the cross-curricular competency that will be taught and evaluated.</b></p> <p>Question the students about the Key Features of the competency so that they can name the observable elements and know-how they will have to acquire and develop and on which they will be evaluated.</p> <p><b>Identify the elements you can see and hear when working in a team.</b></p>
<p>I identify all the essential information required to solve the situational problem.  I identify the task to be performed.  I use the mathematical concepts that are suitable for solving the situational problem.  I check my work and give correct answers.  I show all my work and my problem-solving procedure.  I make sure that my work is clear and well-organized.</p>	<b>Cooperates with others</b>
<b>Uses mathematical reasoning (C2)</b>	<ol style="list-style-type: none"> <li>1. I accept working with others.</li> <li>2. I offer ideas to help advance the team's work.</li> <li>3. I take the opinions of others into consideration as I complete my work.</li> <li>4. I set a goal for myself (an element to be improved).</li> </ol>
<p>I analyze and understand the task to be completed by identifying all the essential information.  I choose the mathematical information that is relevant for the situation.  I correctly apply (without errors) the mathematical knowledge that I have chosen.  I present a clear and well-organized procedure (step by step).  I justify my procedure and my solution.  or  I prove my conjecture.</p>	<b>Proactive Regulation</b>
<b>Communicates by using mathematical language (C3)</b>	<p>Proactive Regulation “is based on observations made during previous learning and evaluation situations that are then used to direct future situations.” *</p> <p>Have I created a Learning and Evaluation</p>

<p>I am able to reformulate a mathematical message in my own words or with the help of a type of representation*.</p> <p>I select the essential information and sift out the right information in a mathematical message.</p> <p>I choose the type of representation* suited to the mathematical message I want to convey.</p> <p>I organize my ideas and set up a communication plan.</p> <p>* <b>Type of representation:</b> diagram, graph, operation, formula, image, word, table</p>	<p>Situation that responds to the various learning styles, needs, and abilities of all my students (flexibility, adaptation, modification)?</p> <p>* Evaluation of Learning at the Secondary Level Framework</p>
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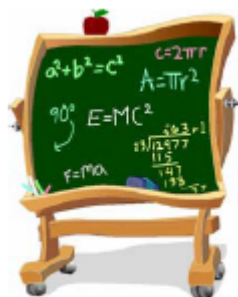
SUPPORTING THE PERFORMANCE PHASE OF A LES	SUPPORTING THE INTEGRATION PHASE OF A LES
 <p>During this phase, it is essential to ensure that the students understand the task by observing and accompanying them (questioning, giving positive feedback and validating). For the teacher, this is the mediation phase.</p>	<b>Introducing the Essential Question or Problem to Solve</b>
<b>Possible Questions</b>	<p>During the Integration Phase, the teacher helps the students identify their new knowledge and the strategies used. The teacher prepares them to transfer their learning to daily life and to other learning situations.</p>
<p>Do you understand the task to be performed? Can you repeat it in your own words? What information has been given to help perform the task? Do you have enough information to carry it out? Is all the information necessary? Do you have an action plan? Is everything going according to the plan? What difficulty are you faced with? How are you going to verify this step? What strategies have you used? What is the best solution? Are you using accurate information? How could you check your work?</p>	<b>Possible Questions</b> <p>Can you explain your process and your answer to the class? Are you sure about your answer? Is it possible to get another answer or answers? Why? How? What strategy (what method) was the most effective? Did you stick to your original plan? Did you find it difficult to stick it out to the very end of the task? Are you proud of yourself for sticking it out? What do you now know that you didn't know when you started the LES? Are there some strategies that you need to learn more about? How can what you learned be useful to you in school? ...outside school? What could you transfer and use in another learning situation? What challenge(s) would you like to take on in future LES?</p>
<b>Interactive Regulation</b>	<b>Retroactive Regulation</b>
<p>During a task, ensure that your students understand and are comfortable by answering the questions that arise so that they will continue to progress.</p> <p>Highlight the strategies used by your students</p> <p>Make adjustments, if necessary, in light of your observations.</p>	<p><b>Retroactive Regulation</b> "involves reviewing completed tasks. It occurs at a suitable time in the competency development process, and allows the teacher to adjust his or her pedagogical approach on the basis of the difficulties observed." *</p> <p>Make adjustments for the next LES, if necessary, in light of your observations.</p> <p>Do I have to make any adjustments to this LES if I were to use it again?</p>

		<p>* Evaluation of Learning at the Secondary Level Framework</p>
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<b>STRATEGIES* Employed in Mathematics that Students Can Learn to Use When Exercising Their Competencies</b>	
<b>UNDERSTANDING STRATEGIES *</b>	
<ul style="list-style-type: none"> <li>• Reading more than once.</li> <li>• Distinguishing between everyday language and mathematical language.</li> <li>• Highlighting the useful facts and information.</li> <li>• Identifying what you know and what you are trying to find out.</li> <li>• Conceptualizing the situation mentally or in writing.</li> <li>• Reformulating the situation in one's own words.</li> </ul>	
<b>ORGANIZING STRATEGIES *</b>	
<ul style="list-style-type: none"> <li>• Identifying the essential information (explicit, implicit).</li> <li>• Showing and organizing the data using lists, tables, diagrams, concrete materials, drawings...</li> <li>• Using external resources such as a mathematical lexicon, a dictionary, data tables...</li> <li>• Identifying the concepts and processes relevant to the situation.</li> </ul>	
<b>SOLVING STRATEGIES (process and result) *</b>	
<ul style="list-style-type: none"> <li>• Using a trial-and-error approach.</li> <li>• Working backwards.</li> <li>• Referring to a similar problem that he/she has already solved.</li> <li>• Breaking down a complex problem into sub-problems.</li> <li>• Simplifying the problem (e.g.: replacing the numbers with smaller ones, replacing a fraction with a whole number...).</li> </ul>	
<b>VALIDATING STRATEGIES *</b>	
<ul style="list-style-type: none"> <li>• Verifying one's solutions by means of examples or reasoning.</li> <li>• Completing the proofs (reverse operation) when possible.</li> <li>• Looking for counter-examples.</li> <li>• Comparing procedures and final answers with those of a teacher or of classmates.</li> <li>• Establishing the links between the answer and the initial question.</li> </ul>	
<b>COMMUNICATING STRATEGIES *</b>	
<ul style="list-style-type: none"> <li>• Organizing one's ideas for the purpose of sharing.</li> <li>• Using correct mathematical vocabulary.</li> <li>• Using different types of representation (diagrams, drawings...).</li> <li>• Experimenting with different way of conveying a mathematical message (poster, drawing, video, audio recording, projector, ICT...).</li> <li>• Explaining and defending his/her reasoning.</li> </ul>	
<p>* The teacher must make sure to model, teach, and accompany the students in the process of learning these various strategies related to mathematics.</p> <p>* It would be interesting if the teacher were to post the strategies that are suggested and taught so that the students can refer to them during their learning and evaluation situations. The poster should be developed and updated over time.</p>	

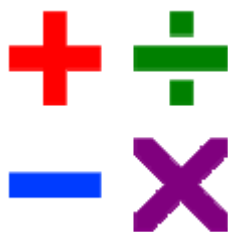
## Competency 2

### Uses mathematical reasoning



**Proper implementation of  
mathematical reasoning suited  
to the situation  
(Cr 3)**

I analyze and understand the task to be  
completed by indentifying all the essential  
information.



**Correct use of appropriate  
mathematical concepts and  
processes  
(Cr 2)**

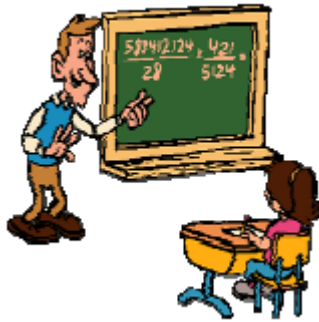
I choose the mathematical knowledge that is  
appropriate for the situation.



**Proper organization of the steps in an  
appropriate procedure  
(Cr 4)**

I correctly apply (without errors) the  
mathematical knowledge I have chosen.

**Competency 2**  
**Uses mathematical reasoning**



**Correct justification of the steps in  
an appropriate procedure  
(Cr 5)**

**I present a clear and well-organized procedure  
(step by step).**

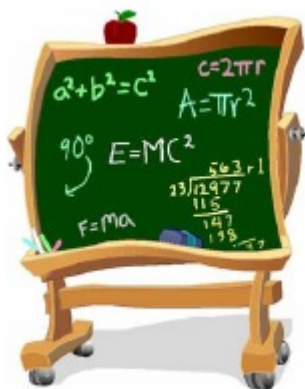


**Formulation of a conjecture  
appropriate to the situation  
(Cr 1)**

**I justify my procedure and my solution.  
or  
I prove my conjecture.**

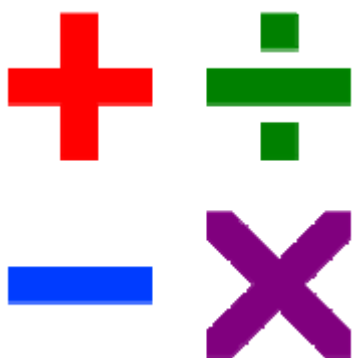
## Competency 2

### Uses mathematical reasoning



**Proper implementation of mathematical reasoning suited to the situation  
(Cr 3)**

**I analyze and understand the task to be completed by identifying all the essential information.**



**Correct use of appropriate mathematical concepts and processes  
(Cr 2)**

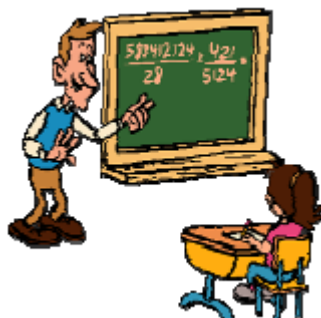
**I choose the mathematical knowledge that is appropriate for the situation.**





**Proper organization of the steps in an appropriate procedure (Cr 4)**

**I correctly apply (without errors) the mathematical knowledge I have chosen.**



**Correct justification of the steps in an appropriate procedure (Cr 5)**

**I present a clear and well-organized procedure (step by step).**



**Formulation of a conjecture appropriate to the situation (Cr 1)**

**I justify my procedure and my solution.**

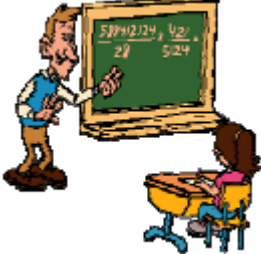
**or**

**I prove my conjecture.**

Consult Appendix D in the "My Mobile Canteen Small Business" section at the following link:

<http://lienssaepfae.educationquebec.qc.ca>

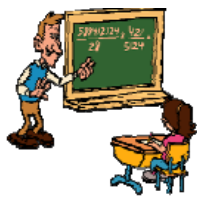
Observation Chart  
Uses mathematical reasoning

	Proper implementation of mathematical reasoning suited to the situation (Cr3)	Correct use of mathematical concepts and processes (Cr2)	Proper organization of the steps in an appropriate procedure (Cr4)	Correct justification of the steps in an appropriate procedure (Cr 5)	Formulation of a conjecture suited to the situation (Cr 1)	
	Analyzes and understands the task to be completed by identifying all the essential information.	Chooses the mathematical information that is appropriate for the situation.	Correctly applies (without errors) the mathematical knowledge chosen.	Presents a clear and well-organized procedure (step by step).	Justifies his /her procedure and solution.	or Proves his/her conjecture.

## Self-Evaluation

Name: \_\_\_\_\_

## Uses mathematical reasoning

	Date :			Date :			Date :		
	Easily	With some help	With difficulty	Easily	With some help	With difficulty	Easily	With some help	With difficulty
									
I analyze and understand the task to be completed by identifying all the essential information.									
I choose the mathematical knowledge that is appropriate for the situation.									
I correctly apply (without errors) the mathematical knowledge I have chosen.									
I present a clear and well-organized procedure (step by step).									
I justify my procedure and my solution. Or I prove my conjecture.									
Teacher's initials if in agreement with me.									

### Competency 3

#### Communicates using mathematical language

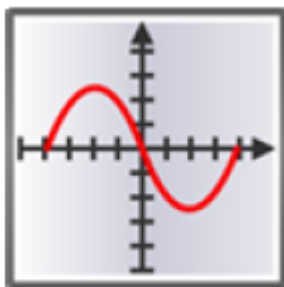


#### Correct interpretation of a mathematical message (Cr 1)

I am able to reformulate a mathematical message in my own words or with the help of a type of representation\*.

I select the essential information and sift out the right information in a mathematical message.

\*Type of representation: diagram, graph, operation, formula, image, word, table.



#### Production of a message in keeping with the terminology, rules and conventions of mathematics, and suited to the context (Cr 2)

I organize my ideas and set up a communication plan.

I choose types of representation (diagram, graph, operation, formula, image, word, or table) suited to the mathematical message I want to convey.

## Competency 3

### Communicates using mathematical language

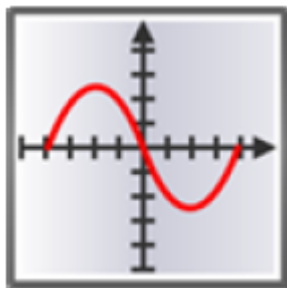


#### Correct interpretation of a mathematical message (Cr 1)

I am able to reformulate a mathematical message in my own words or with the help of a type of representation\*.

I select the essential information and sift out the right information in a mathematical message.

\*Type of representation: diagram, graph, operation, formula, image, word, or table.



#### Production of a message in keeping with the terminology, rules and conventions of mathematics, and suited to the context (Cr 2)

I organize my ideas and set up a communication plan.

I choose types of representation (diagram, graph, operation, formula, image, word, or table) suited to the mathematical message I want to convey.


Observation Chart  
Communicates using mathematical language

[illegible]

## Self-Evaluation

Name: \_\_\_\_\_

## Communicates using mathematical language

	Date :			Date :			Date :		
	Easily	With some help	With difficulty	Easily	With some help	With difficulty	Easily	With some help	With difficulty
I am able to reformulate a mathematical message in my own words or with the help of a type of representation (diagram, graph, operation, formula, image, word, table).									
I select the essential information and sift out the right information in a mathematical message.									
I organize my ideas and set up a communication plan.									
I choose the type of representation (diagram, graph, operation, formula, image, word, or table) suited to the mathematical message I want to convey.									
Teacher's initials if in agreement with me.									



## Competency 1

### Solves a situational problem



**Indication (oral or written) that the situational problem has been understood (Cr 1)**

I identify all the essential information required to solve the situational problem.

I identify the task to be performed.



**Application of appropriate mathematical knowledge (Cr 2)**

I use the mathematical concepts that are suitable for solving the situational problem.

I check my work and give correct answers.



**Development of an appropriate solution (Cr 3)**

I show all my work and my problem-solving procedure.

I make sure that my work is clear and well-organized.

## Competency 1

### Solves a situational problem



**Indication (oral or written)  
that the situational problem  
has been understood (Cr 1)**

I identify all the essential information  
required to solve the situational problem.

I identify the task to be performed.



**Application of appropriate  
mathematical  
knowledge (Cr 2)**

I use the mathematical concepts that are  
suitable for solving the situational problem.

I check my work and give correct answers.



**Development of an  
appropriate solution (Cr 3)**

I show all my work and my problem-solving  
procedure.

I make sure that my work is clear and well-  
organized.


## Observation Chart Solves a situational problem

[illegible]

## Self-Evaluation

Nom : \_\_\_\_\_

## Solves a situational problem

	Date: _____			Date: _____			Date: _____		
	Easily	With some help	With difficulty	Easily	With some help	With difficulty	Easily	With some help	With difficulty
									
I identify all the essential information required to solve the situational problem.									
I identify the task to be performed.									
I use the mathematical concepts that are suitable for solving the situational problem.									
I check my work and give correct answers.									
I show all my work and my problem-solving procedure.									
I make sure that my work is clear and well-organized.									
Teacher's initials if in agreement with me.									



# COOPERATES WITH OTHERS

*Cycle One Secondary*

## CO-EVALUATION

Name: _____	Date :		Date :		Date :	
	Me	My teacher	Me	My teacher	Me	My teacher
1. I agree to work with others.						
2. I offer ideas to help move the team forward.						
3. I do my work and taking the opinions of others into account.						

I set a goal for myself (element for improvement):

Legend	Green: Easy	Yellow: Making progress	Orange: Needs improvement
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# My Mobile Canteen Small Business Learning and Evaluation Situation

## PEDAGOGICAL DIFFERENTIATION

Task	Flexibility	Adaptation	Modification
1. Taxable or Non-taxable	<ul style="list-style-type: none"> <li>• Work in a group, collaboratively, or individually.</li> <li>• Have access to a memory aide.</li> <li>• Provide a checklist.</li> <li>• Read and re-read the statement of the problem or part of it.</li> <li>• Provide further details on the overall context of the task.</li> <li>• Provide further details on the general vocabulary related to the context.</li> <li>• Explain the organization of the tasks presented.</li> </ul>	<ul style="list-style-type: none"> <li>• Increase the spacing of the text and put less text on each page.</li> <li>• Increase the font of the text.</li> <li>• Split up the schedule.</li> <li>• Give extra time.</li> <li>• Explain the meaning of the mathematical vocabulary.</li> <li>• Break the situational problem down into sub-problems.</li> <li>• Provide multiplication tables.</li> <li>• Have access to a calculator for <b>checking</b>.</li> <li>• Have access to a computer.</li> <li>• Have access to a cash register.</li> </ul>	<ul style="list-style-type: none"> <li>• Permit the use of a calculator <b>to perform operations</b>.</li> <li>• Provide a tax table.</li> <li>• Provide a reference guide for calculating taxes.</li> <li>• Provide a reference guide for calculating profits.</li> <li>• Highlight or point out the essential information in the situational problem.</li> <li>• Reduce the number of evaluation criteria for the competency <b>or</b> present evaluation criteria below the expectations of the cycle.</li> <li>• Indicate the concepts and procedures to use.</li> <li>• Explain a concept or a procedure.</li> <li>• Correct the solution or certain parts of the solution (process and result).</li> </ul>
2. A Question of Profit			
3. Storage Space Capacity			
4. The Right Choice			
5. My Mobile Canteen Small Business			

Adapted from *Differentiation*, Working Document, C.S. du Pays-des-Bleuets



**RUBRIC FOR EVALUATING A COMPLEX TASK FOR THE  
COMPETENCY USES MATHEMATICAL REASONING**

<b>OBSERVABLE INDICATORS</b>					
<b>Evaluation Criteria</b>		<b>LEVEL A</b>	<b>LEVEL B</b>	<b>LEVEL C</b>	<b>LEVEL D</b>
	Correct use of appropriate mathematical concepts and processes	<ul style="list-style-type: none"> <li>Chooses the mathematical concepts and processes that allow him/her to meet the requirements of the situation.</li> <li>Presents a complete and correct solution.</li> </ul>	<ul style="list-style-type: none"> <li>Chooses mathematical concepts and processes appropriate to the situation.</li> <li>Presents a solution that includes minor mistakes (miscalculations, inaccuracies, omissions, etc.).</li> </ul>	<ul style="list-style-type: none"> <li>Chooses some mathematical concepts and processes appropriate to the situation.</li> <li>Presents a solution with mistakes related to the concepts and processes.</li> </ul>	<ul style="list-style-type: none"> <li>Chooses inappropriate concepts and processes.</li> <li>Makes major mistakes related to the application of the concepts and processes.</li> </ul>
	Proper implementation of mathematical reasoning suited to the situation	<ul style="list-style-type: none"> <li>Identifies all elements of the problem.</li> <li>Chooses strategies that allow him/her to meet the requirements of the situation efficiently.</li> </ul>	<ul style="list-style-type: none"> <li>Identifies the essential elements of the problem.</li> <li>Chooses strategies that allow him/her to meet the requirements of the situation appropriately.</li> </ul>	<ul style="list-style-type: none"> <li>Identifies some elements of the problem.</li> <li>Chooses strategies that allow him/her to meet the requirements of the situation only partially.</li> </ul>	<ul style="list-style-type: none"> <li>Tends to place all elements of the problem or statement together without analysis or discrimination.</li> <li>Chooses strategies that have little or no connection to the requirements of the situation and follows an intuitive process.</li> </ul>
	Proper organization of the steps in an appropriate procedure	<ul style="list-style-type: none"> <li>Presents a procedure that highlights the sequence of the steps.</li> <li>Produces a clear and concise solution with explicit evidence of the reasoning that justifies what was done or how it was done.</li> </ul>	<ul style="list-style-type: none"> <li>Presents a clear and organized procedure.</li> <li>Produces a clear solution with evidence that justifies what was done or how it was done, even though some steps are implicit.</li> </ul>	<ul style="list-style-type: none"> <li>Presents a clear procedure that lacks structure.</li> <li>Provides little or unclear evidence to justify what was done or how it was done.</li> </ul>	<ul style="list-style-type: none"> <li>Presents a procedure consisting of isolated elements or shows no work.</li> </ul>
	Correct justification of the steps in an appropriate procedure	<ul style="list-style-type: none"> <li>Justifies his/her actions or results by showing explicit evidence of his/her reasoning.</li> <li>Draws conclusions based on rigorous mathematical arguments (rules, laws, properties, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>Justifies his/her actions or results by showing evidence of what was done or how it was done, even though some steps are implicit.</li> <li>Draws conclusions based on appropriate mathematical arguments.</li> </ul>	<ul style="list-style-type: none"> <li>Shows little evidence to justify what was done or how it was done.</li> <li>Draws conclusions based on not very appropriate mathematical arguments (plausible).</li> </ul>	<ul style="list-style-type: none"> <li>Shows very little or no evidence to justify what was done or how it was done.</li> <li>Draws conclusions based on incorrect or non-mathematical arguments or on an absence of justification.</li> </ul>
	Formulation of a conjecture suited to the situation	<ul style="list-style-type: none"> <li>Formulates an appropriate conjecture based on a structured and rigorous analysis of the information.</li> </ul>	<ul style="list-style-type: none"> <li>Formulates an appropriate conjecture based on an analysis of the information.</li> </ul>	<ul style="list-style-type: none"> <li>Formulates an unclear conjecture which is based nonetheless on an analysis of some of the information.</li> </ul>	<ul style="list-style-type: none"> <li>Deems it sufficient to base him/herself on an example in order to formulate a conjecture.</li> </ul>



**RUBRIC FOR EVALUATING A COMPLEX TASK FOR THE  
COMPETENCY COMMUNICATES USING MATHEMATICAL LANGUAGE**

OBSERVABLE INDICATORS					
Evaluation Criteria		LEVEL A	LEVEL B	LEVEL C	LEVEL D
	Correct interpretation of a mathematical message *	<ul style="list-style-type: none"> <li>Interprets a mathematical message taking into account all its elements.</li> <li>Extracts the correct information after processing all the data.</li> </ul>	<ul style="list-style-type: none"> <li>Interprets a mathematical message taking into account all its elements.</li> <li>Extracts the correct information after processing most of the data.</li> <li>Recognizes the elements of everyday language and uses them in their mathematical sense.</li> </ul>	<ul style="list-style-type: none"> <li>Interprets a mathematical message omitting some of its elements.</li> <li>Extracts the correct information after processing some of the data.</li> <li>Recognizes some elements of everyday language and uses them in their mathematical sense.</li> </ul>	<ul style="list-style-type: none"> <li>Interprets a mathematical message omitting several of its elements.</li> <li>Extracts incorrect information after processing the data.</li> <li>Combines inadequate terms from everyday language with mathematical terms.</li> </ul>
	Production of a message in keeping with the terminology, rules and conventions of mathematics, and suited to the context *	<ul style="list-style-type: none"> <li>Produces an effective mathematical message that rigorously follows the rules and conventions of mathematical language.</li> <li>Chooses the mathematical concepts and processes appropriate to the subject of the message.</li> <li>Uses the most appropriate element(s) of mathematical language to convey a message or to express his/her ideas.</li> </ul>	<ul style="list-style-type: none"> <li>Produces a mathematical message consisting of correct, organized and coherent ideas, with minor errors in applying the rules and conventions of mathematical language.</li> <li>Chooses most of the mathematical concepts and processes appropriate to the subject of the message.</li> <li>Uses one or more adequate elements of mathematical language to convey a message or to express his/her ideas.</li> </ul>	<ul style="list-style-type: none"> <li>Produces a mathematical message consisting of some correct but undeveloped ideas, with errors in applying the rules and conventions of mathematical language,</li> <li>Chooses some mathematical concepts and processes appropriate to the subject of the mathematical message.</li> </ul>	<ul style="list-style-type: none"> <li>Produces a mathematical message consisting of several erroneous ideas with little or no concern for the rules and conventions of mathematical language.</li> <li>Chooses mathematical concepts and processes that are not appropriate to the subject of the mathematical message to be produced.</li> <li>Uses elements of mathematical language that are not adequate to convey a message or to express his/her ideas.</li> </ul>

\*The student must be provided with feedback on this element, but the element must not be considered when determining the student's mark in the report card. See *Framework for the Evaluation of Learning, Mathematics, Secondary School Cycles One and Two*





# **RUBRIC FOR EVALUATING A COMPLEX TASK FOR THE COMPETENCY *SOLVES A SITUATIONAL PROBLEM***

OBSERVABLE INDICATORS					
Evaluation Criteria		LEVEL A	LEVEL B	LEVEL C	LEVEL D
	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"> <li>identifies the relevant information.</li> <li>determines all the steps involved.</li> <li>takes all the constraints into account.</li> </ul>	<p><i>In solving the situational problem the student...</i></p> <ul style="list-style-type: none"> <li>identifies the relevant information, but needs assistance to clarify some aspects of the situational problem.</li> <li>determines the main steps involved.</li> <li>takes the main constraints into account.</li> </ul>	<p><i>In solving the situational problem the student...</i></p> <ul style="list-style-type: none"> <li>recognizes the explicit information, but needs assistance to clarify several aspects of the situational problem.</li> <li>determines the most obvious steps.</li> <li>takes some constraints into account.</li> </ul>	<p><i>In solving the situational problem the student...</i></p> <ul style="list-style-type: none"> <li>recognizes the explicit information but is unable to put it to use. He/she needs assistance to clarify all aspects of the situational problem.</li> <li>takes few constraints into account.</li> </ul>
	Application of appropriate mathematical knowledge	<ul style="list-style-type: none"> <li>Uses the required mathematical concepts and processes.</li> <li>Produces a correct solution or one with minor mistakes.</li> </ul>	<ul style="list-style-type: none"> <li>Uses the main mathematical concepts and processes required.</li> <li>Produces a solution with minor mistakes related to concepts and processes.</li> </ul>	<ul style="list-style-type: none"> <li>Uses some of the mathematical concepts and processes required.</li> <li>Produces a solution with mistakes related to concepts and processes.</li> </ul>	<ul style="list-style-type: none"> <li>Uses inappropriate mathematical concepts and processes.</li> <li>Makes major mistakes related to the application of concepts and processes.</li> </ul>
	Development of an appropriate solution (procedure and result)	<ul style="list-style-type: none"> <li>Uses efficient problem-solving strategies.</li> <li>Shows his/her work in a complete and detailed fashion.</li> <li>Validates the steps in his/her solution and rectifies it, if necessary.</li> </ul>	<ul style="list-style-type: none"> <li>Uses effective problem-solving strategies.</li> <li>Shows his/her work appropriately, even though some steps are missing or unclear.</li> <li>Validates the main steps in his/her solution, particularly the operations.</li> </ul>	<ul style="list-style-type: none"> <li>Shows little of his/her work and it is unclear.</li> <li>Checks some operations.</li> </ul>	<ul style="list-style-type: none"> <li>Shows his/her work, but it consists of isolated elements.</li> <li>Makes no effort to review his/her work.</li> </ul>



## Perishable and Non-perishable Food

### Cultural References: A Look Back at Taxes

Consult the *My Mobile Canteen Small Business* section in  
Appendix T at the following address:

<http://lienssaepfae.educationquebec.qc.ca>

