LEARNING EVALUATION SITUATION (LES)

Cycle 2 – Primary Education

« Join in and roll your coins! »

Teacher's Guide

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This Learning Situation was created based on
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DESCRIPTION OF THE LEARNING SITUATION

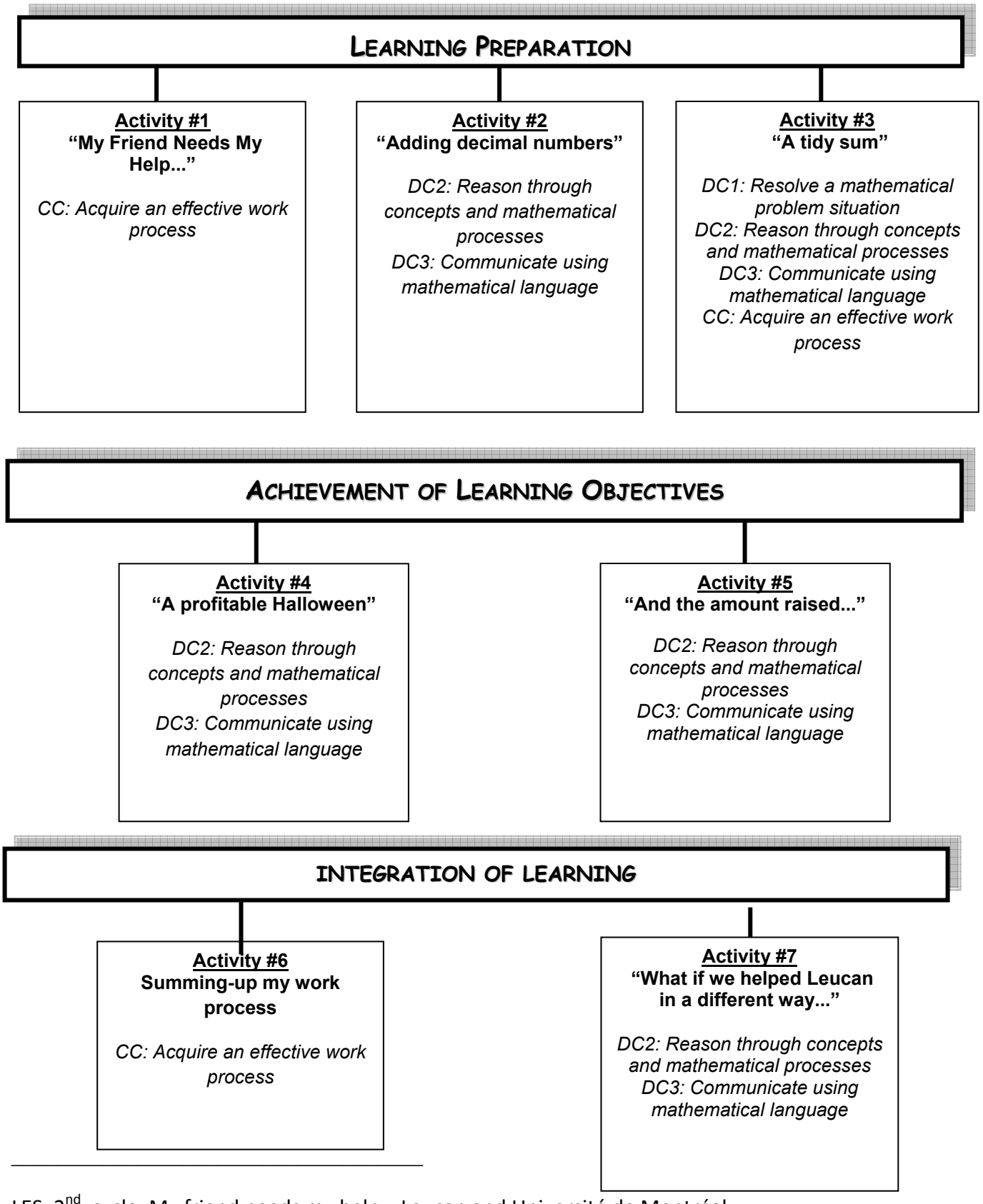
Educational Intent

Through this Learning Situation, students will get involved in a fundraising campaign suggested by Leucan to help families and cancer-stricken children. Taking mostly place on Halloween's night, students will carry money boxes to raise funds.

Students will count the money raised by their group, and calculate the money raised by the other groups of students from their level. Through this program, they will develop their skills in mathematical problem-solving while following a structured outline.

General Learning Subjects
Educational intent: **Living together and citizenship**
Growth axis: Culture of peace Interdependency of people, populations, and their achievements; equal rights and the right of groups and people to be different; negative consequences of stereotypes and other forms of discrimination and exclusion; fight against poverty and illiteracy; raise awareness about cooperation and aggression; peaceful conflict resolution; terms of agreement or contract.
Cross-curricular Competencies (CC)
Acquire an effective work process: • Analyze the task to accomplish • Commit to an approach • Get the task done: mobilize the required resources • Analyze the approach
Disciplinary Competencies (DC)
Mathematics, sciences and technologies: C1 Resolve a mathematical problem situation C2 Reason through concepts and mathematical process C3 Communicate using mathematical language

STRUCTURE OF THE LEARNING SITUATION



LEARNING PLANNING

Targeted Competence: Acquire effective work processes

Internal resources regarding essential skills KNOWLEDGE, KNOW-HOW AND SKILLS	
KNOWLEDGE • Objectives and means • Task organisation (charts) • Deadlines	
KNOW-HOW • Set the task background • Think before and throughout the task about the best way to reach the objective • Complete the task • Analyze one's process to verify its efficiency	
SKILLS • Learn to persevere	
External resources INSTRUCTIONAL MATERIAL	
Student's Notebook Ruler Coins	"My Friend Needs My Help..." movie White paper board Marker

Targeted Competences:

C1 Resolve a mathematical problem situation

C2 Reason through concepts and mathematical processes

C3 Communicate using mathematical language

Internal resources regarding essential skills KNOWLEDGE, KNOW-HOW AND SKILLS
KNOWLEDGE Arithmetic: meaning and writing of numbers • Natural numbers below 100,000 • Decimal numbers up to the hundredths Arithmetic: meaning of operations on numbers • Decimal numbers: addition and subtraction

- Natural numbers: multiplication (repeated addition)

Arithmetic: operations on numbers

- Decimal numbers: written calculation – addition and subtraction with results up to the hundredths
- Natural numbers: written calculation – personal process (multiplication)

Statistics

- Collect, describe and illustrate data on charts

KNOW-HOW

- Illustrate a problem situation by calling on appropriate concepts and arithmetic processes
- Apply various calculating strategies to illustrate a solution
- Validate the solution
- Communicate using mathematical language

SKILLS

- Learn to be resourceful

External resources

INSTRUCTIONAL MATERIAL

Multibase Material Coins Student's Notebook Ruler or arithmetic paper	Money raised by each student White paper board Marker

EVALUATION PLANNING

Targeted Competence: Acquire an efficient work process

PFEQ CRITERIA	INDICATORS (OBSERVABLES MANIFESTATIONS) The student…	STUDENT'S NOTEBOOK (PAGES)
Understanding of the task to be completed	Produces a complete work plan.	2 and 3
Task execution	Collects the relevant data.	8-9-10-11
	Organizes data coherently.	
Process sequence analysis	Adjusts his/her process through an evaluation of his/her efficiency.	12
Perseverance and tenacity during tasks	Completes the project according to deadlines.	Teachers' observations
Success criteria: Student produces a work plan specifying the tasks to be completed, the names of those in charge, the deadlines, and a description of the events. He/she puts together an efficient work process and strategies to calculate the money raised and to communicate this information to other students.		
The student's participation tool: Summing-up my work process		
The teacher's evaluation tool: Assessment grid with a three-level scale.		

Targeted Competencies:

C1 Resolve a mathematical problem situation

C2 Reason through concepts and mathematical processes

C3 Communicate using mathematical language

PFEQ CRITERIA	INDICATORS (OBSERVABLES MANIFESTATIONS) The student…	STUDENT'S NOTEBOOK (PAGES)
C2 - Proper analysis of a situation of application	Collects all required data at every step of the problem-solving process.	4-5-6-8-9-10-11-14-15
C2 - Choice of concepts and mathematical processes appropriate to the situation of application		
C2 - Proper application of selected process	Accurately adds up the decimal numbers provided.	5-6-8-9-10-11 14-15-16
C1 - Production of a correct solution: process and outcome	Follows a process respectful of the restrictions.	4-6-8-9-10-11 14-16
	Suggests an appropriate solution.	
C1 - Explanation of the relevant elements of the solution	Communicates his/her results, processes and data using mathematical vocabulary.	5-7-9 (designed poster)-14
C3 - Correct interpretation of a message (spoken or written) using mathematical language	Evaluates process to validate it.	7-11-16
C3 - Production of a correct message (oral or written) using mathematical language		
Success criteria: In the context of the LEUCAN money box fundraising campaign, the student accurately calculates the funds raised by students from his group and level. He/she defines the submitted problem to find a proper solution. He/she clearly communicates his/her results and processes using mathematical vocabulary.		
The student's participation tool: Co-evaluation (page 16)		
The teacher's evaluation tool: Assessment grid with a four-level scale, co-evaluation (page 16)		

DESCRIPTIVE ANALYTICAL GRID

TARGETED COMPETENCIES: Acquire an efficient work process

INDICATORS	VERY GOOD The student…	GOOD The student…	NEEDS IMPROVEMENT The student…
Understanding of the task to be completed	Produces a detailed and structured work plan which includes steps, tasks, deadlines and the names of those in charge.	Produces a work plan with essential elements (tasks and the names of those in charge).	Produces a work plan specifying some elements (tasks).
Task execution	Collects all relevant data (amounts raised by him/her, by other students in his/her group, and by other groups of his/her level).	Collects some data (amount raised by him/her and by other students in his /her group).	Collects some data (amount he/she raised).
	Organizes data in a coherent manner.	Organizes data in a clear manner.	Organizes data in a confused manner.
Process sequence analysis	Carefully completes his/her thought process and suggests another pertinent work process.	Briefly completes his/her thought process and suggests another more or less pertinent work process.	Hastily completes his/her thought process and has difficulties coming up with another work process.
Perseverance and tenacity during tasks	Adjusts his/her work as needed and respects all deadlines.	Adjusts his/her work with a little help and often respects deadlines.	Does not persevere much in front of setbacks, gives up easily and produces an incomplete project.

DESCRIPTIVE ANALYTICAL GRID

TARGETED COMPETENCIES:

C1 Resolve a mathematical problem situation
C2 Reason through concepts and mathematical processes
C3 Communicate using mathematical language

INDICATORS	VERY GOOD The student…	GOOD The student…	ACCEPTABLE The student…	NEEDS IMPROVEMENT The student…
Collected data are sufficient and pertinent	Collects and organizes all required data at every step of the problem-solving process.	Collects data at every step of the problem-solving process, including some unnecessary info.	Collects data at every step of the problem-solving process but is missing some information.	Collects data at only one step of the problem-solving process.
Proper addition of decimal numbers	Completes the addition of decimal numbers with no mistake.	Completes the addition of decimal numbers with one or two mistakes.	Completes the addition of decimal numbers with three or four mistakes.	Completes the addition of decimal numbers with at least five mistakes.
Accurate problem-solving process (calculations and charts)	Leaves traces of every step of the process (calculations or diagrams/ drawings) and follows restrictions.	Leaves pretty clear traces of the process (calculations or diagrams/drawings).	Leaves few or incomplete traces of the process.	Leaves few or incomprehensible traces of the process.
Proper solution	Produces a proper solution with no mistake.	Produces a correct solution with some minor mistakes.	Produces a correct solution with several mistakes.	Produces a wrong solution and does not respect restrictions.
Precision of the mathematical vocabulary	Communicates his/her results, processes and data using an extensive mathematical vocabulary, as well as a graphic representation.	Communicates his/her results, processes and data using a mathematical vocabulary, and at least one graphic representation.	Communicates his/her results, processes and data using some mathematical vocabulary, as well as only one graphic representation.	Communicates his/her results, processes and data using everyday vocabulary, as well as only one graphic representation.
Sound evaluation	Astutely evaluates his/her process.	Properly evaluates hiss/her process.	Briefly evaluates hiss/her process.	Partially evaluates hiss/her process.

ACTION IN THE CLASSROOM

LEARNING PLANNING

Activity #1 – "My Friend Needs My Help..."

Competence: CC5 – Acquire an efficient work process.	**Objective**: Identify the required steps to organize a fundraiser for Leucan.
Duration: 60 minutes or more (can be divided into two periods).	**Required material**: "My Friend Needs My Help" movie, white paper board, marker, Student's Notebook - pages 2 and 3

Procedure:
The teacher asks students what they know about "fundraisers", if they have ever taken part in one (e.g. walk against cancer, telethon, etc – should they remember the cause), and if they know who organized those events. The notebooks are distributed, and students start completing them.

The teacher explains they will participate in a campaign suggested by Leucan to help cancer-stricken children and their families: a fundraiser taking mostly place on Halloween night when they will carry money boxes to collect funds.

To explain the reality of cancer-stricken children, the teacher will show students a movie called "My Friend Needs My Help...". Words like "cancer", "leukemia" and "Leucan" and any other words in the video which could affect the students' understanding should be explained beforehand.

The teacher then sums up the movie since occurrences of cancer are high and some students might have already been exposed to it. The teacher encourages children to talk about it openly. This is a good way to avoid negative reactions and to adjust some false preconceptions. We highly recommend the teacher reads the information paper beforehand so he/she can be more familiar with this disease.

The teacher then questions students on the steps to follow to hold a fundraiser, and then he/she holds up three signs:

BEFORE	DURING	AFTER

He/she then asks students how they would name each step. For example: 1) Planning the fundraising campaign, 2) Collecting funds, and 3) Calculating the money raised. Students write these titles down on pages 2 and 3 of their notebook.

In teams of four, students identify what must be done before, during and after the fundraiser. Back with the whole group, the teacher copies this information on white paper board, which will become the visual reference specifying deadlines for the whole project. The teacher then leads a discussion on the "during" part of the campaign by explaining the students will need to find different ways to raise money

on Halloween day. Finally, the teacher refers them to Leucan's website for the guidelines to follow to organize a fundraising campaign:

http://leucan.qc.ca/cms/assets/documents/Tirelires2009-documentation.pdf.

Activity #2* "Adding up decimal numbers"

This activity can be completed with the use of material available in the classroom.

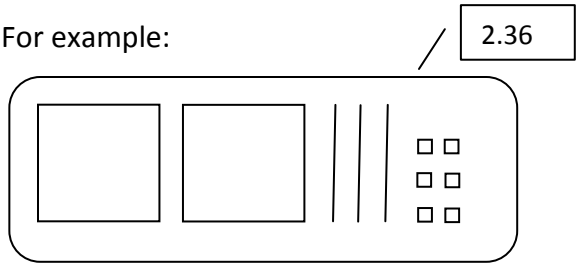
Competencies: Mathematics DC 2-3	**Objective**: Adding up decimal numbers.
Duration: 60 minutes	**Required material**: Multibase Material or one copy of Appendix 1 by student, Student's Handbook - pages 4 and 5

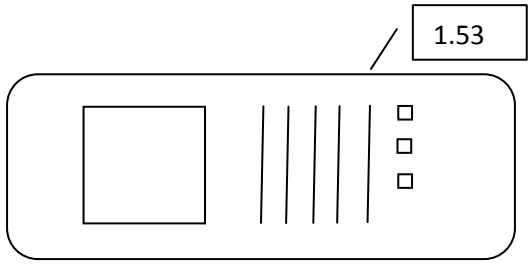
Procedure:
The teacher explains the activity's objective: learning how to add up decimal numbers. He/she suggests students use the Multibase Material* to understand algorithms. The teacher explains the material will be used to add two decimal numbers comprised of a number and a two-digit decimal (e.g.: 2.36 + 1.53).

First, the teacher asks students which value they should allocate to cubes, sticks and chips so as to best reflect decimal numbers. Chips will represent whole numbers, sticks will represent tenths and cubes will represent hundredths.

Second, students form dyads to represent decimal numbers with the Multibase Material.

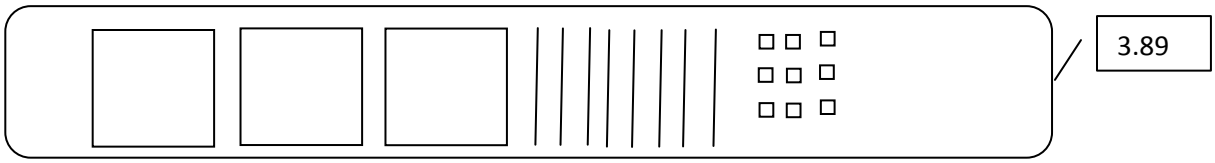
For example:





Third, students find their own strategy to add up the two decimal numbers. E.g. They could put the chips, the sticks and the cubes together and then find out the new number.

Example:



Then students share their strategies with the whole class, and then strategies are linked back to the addition algorithm: numbers in the same position must be added up. The teacher writes a few additional operations (adding of decimal numbers) on the black board for students to resolve.

The same activity can be held for additions with carry over. Material handling presents a greater interest. Adding up numbers made of over 10 sticks will require the exchange of 10 sticks for a chip (one extra whole number). Again, the teacher should draw a link with the algorithm and give students many operations to solve so they may gain the know-how.

**The Multibase Material is made of cubes, sticks (10 cubes), squared chips (100 cubes), and blocks (1,000 cubes). Blocks will not be used in this activity. If you do not have this material in your classroom, you may print copies of Appendix 1 (which is a two-dimensional imitation of the material) and ask students to cut out their own material. Otherwise, the operations to be solved can be represented on the blackboard or on a sheet depending on the operations (as in the above examples). Handling will be reduced but the targeted objective should still be reached.*

Activity #3 – "A tidy sum"

Competencies: Mathematics: DC 1- 2- 3 CC – Acquire an efficient work process.	**Objective**: Acquire an efficient work process to calculate money.
Duration: one 60-minute period and one 45-minute period	**Required material**: About 50 coins (of different values) by student, Coin Value Sheet (Appendix 2), ruler (and for students with learning difficulties: Multibase Material), Student's Notebook – pages 5 and 6

Procedure:

1st period

The teacher distributes envelopes of about fifty plastic coins of different values to students or has them bring coins from home. In the latter case, we suggest including it in the previous week homework.

The teacher asks students to calculate the amount they have. He/she may distribute the Coin Value Sheet (Appendix 2), which includes values of all coins (with the exception of the loony and toonie). This way, through the combination of values, students will be able to complete a few additions without the need to multiply decimal numbers. For example, to find out the value of 34 nickels, one can add 3 times the value of 10 coins and 4 times the value of one coin (repeated addition) **OR** 3 times the value of 10 coins and 1 time the value of 5 coins minus 1 coin.

For loonies, toonies and bills (if any), students simply multiply natural numbers. The teacher asks students to illustrate through a chart their total for each coin, the value of each type as well as the total amount. Afterwards, the students present their work to the whole class. First, each team names an *announcer* (who will present the work to the rest of the class), a *data specialist* (who will complete the chart) and a *count specialist* (who will count coins and bills, if any). On top of fulfilling their assigned role, each member contributes to the problem-solving process and helps others in their roles.

In teams of three, students complete the exercises on pages 6 and 7. Therefore, they must add up the amount of coins of each team member.

2nd period

Each team presents their work and explain their process. The teacher provides feedback on the charts and the process used to count coins. If a chart is faulty or incomplete, the teacher asks questions to bring students to realize what they must improve.

COMPLETION OF LEARNING

Activity #4 – "A profitable Halloween"

Competencies: Mathematics DC 2-3	**Objective**: Calculate the amounts raised (by student, by team and by the whole class) by adding up decimal numbers.
Duration: 60-minute period	**Required material**: Money raised by each student, ruler or arithmetic paper, Student's Notebook - pages 7 and 8, white paper board, marker and Appendix 2.

Procedure:
Students add up the amount of their money box through their preferred method. Ideally, they should follow the example of Activity #3 to organize their data. They may use a ruler and sheet #4 or arithmetic paper.

In teams of four, they add up the sum raised by each teammate. Then, they copy these amounts on the white paper board with a marker using mathematical vocabulary, graphics or any other valid mathematical representation.

Next, the teacher writes down each team's results, and in turn, teams show their poster to their classmates who interpret the amount illustrated. Finally, each student tries to calculate the total amount raised by the whole class. Results are verified with the group.

Activity #5 – "And the amount raised..."

Competencies: Mathematics DC 2- 3	**Objective**: Calculate the money collected by all students in the same level by adding decimal numbers.
Duration: 45 minutes	**Required material**: Amount raised by each class, white paper board, marker, Student's Notebook - page 11

Procedure:
The teacher validates the correct answer with the whole group and asks students to suggest ways to communicate this amount to all students at their level. Through a democratic process, students select one method, and one student produces a poster on a white paper board with a marker, which will be presented to all students at the same level.

Every class from the second level communicates in an original manner the amount raised to other students from the same level. Students interpret sums and add up amounts to find the grand total. They also give their feedback on the quality of the presentations (page 11).

INTEGRATION OF LEARNING

Activity #6 – "Summing-up my work process"

Competencies: CC – Acquire an efficient work process.	**Objective**: Assess the work process.
Duration: 45 min	**Required material**: Student's Notebook - page 12

Procedure:
Individually, students complete the section about their thought process in the Student's Notebook (page 12). The teacher asks questions about their efficiency throughout the process to highlight the right attitudes. Then, he/she notes the problems students had and shares possible solutions. The teacher then notes his/her observations.

Finally, the teacher encourages student to share their thoughts with a focus on strategies to complete a fundraiser and the possible use of these skills in another task or activity.

Activity #7 – "And what if we helped Leucan in a different way..."

Competencies: Mathematics CD 2- 3	**Objective**: Use acquired mathematical concepts in a different context.
Duration: 60 minutes	**Required material**: Student's Notebook - pages 13-16

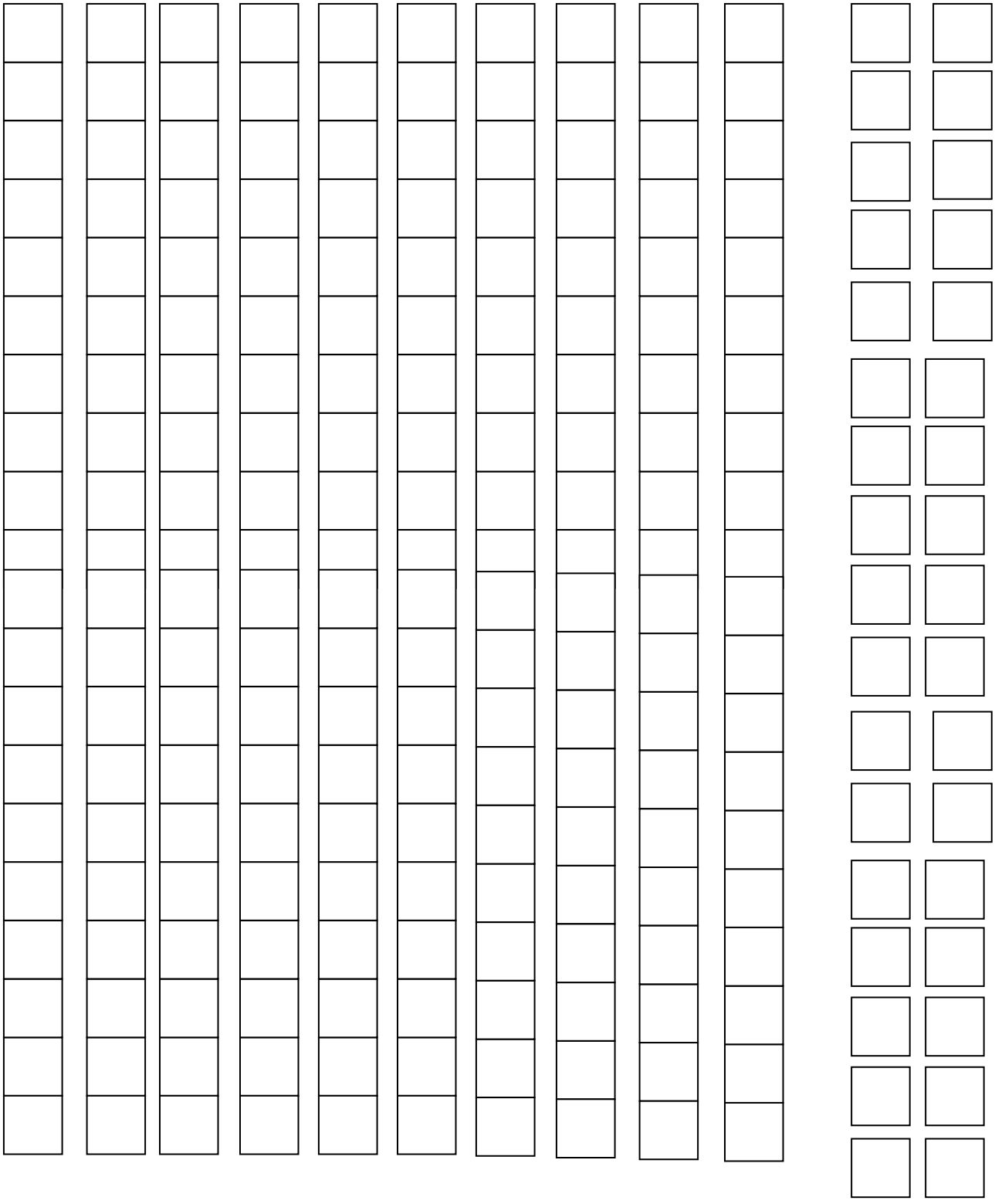
Procedure:

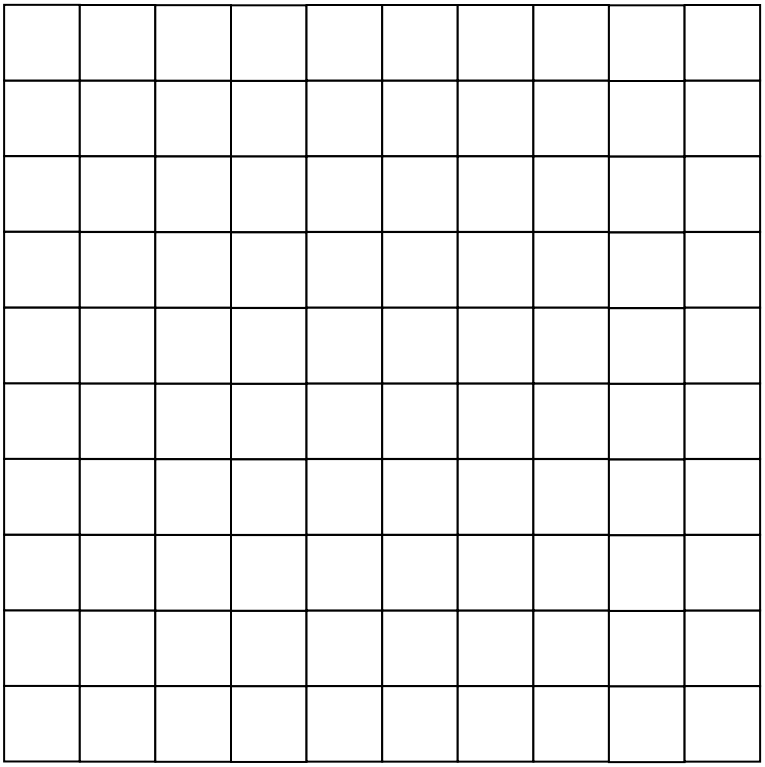
To bring students to use the acquired concepts and skills in future activities, the teacher suggests one last activity. As part of a special Halloween day, the teacher wishes to give prizes to students wearing a costume for the event. He chooses to reward students with fictitious items from Leucan. Students must make purchase decisions in accordance with a budget and other restrictions (instructions can be found on page 13 of the Student's Notebook). Finally, students complete the Co-evaluation of mathematical skills (page 16). The teacher completes the column reserved for his/her feedback.

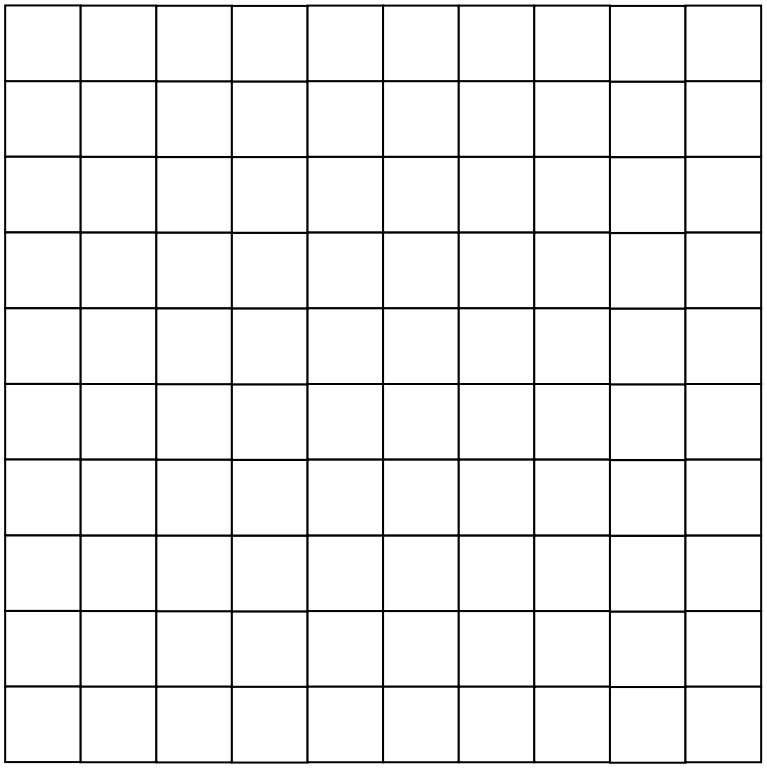
The teacher explains how the money raised by all classes from the level will be sent to Leucan and congratulates students for their involvement in this solidarity project. He/she ends up by leading a short discussion on the importance of completing a project once we agreed to take part in it.

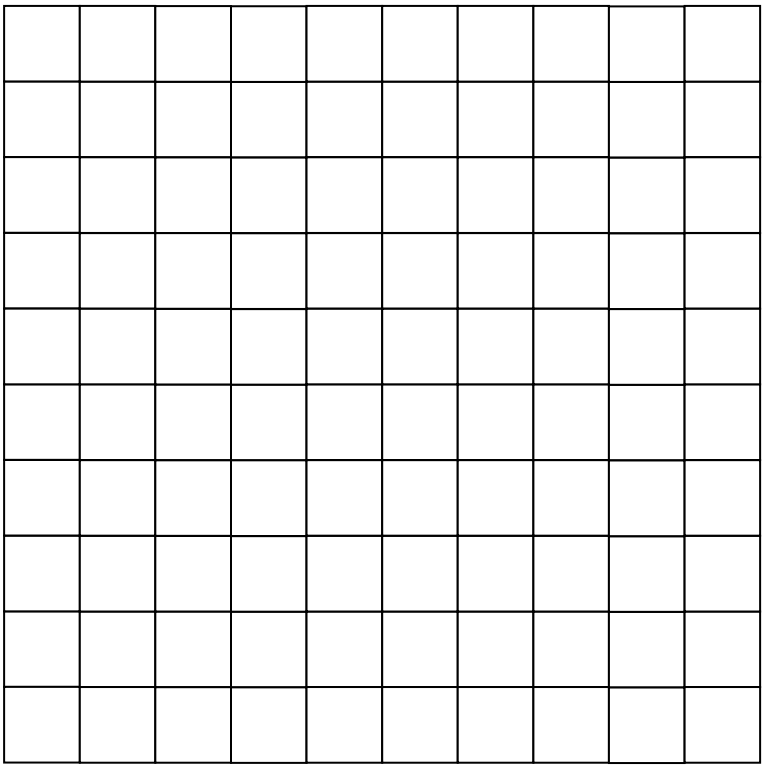
APPENDIX

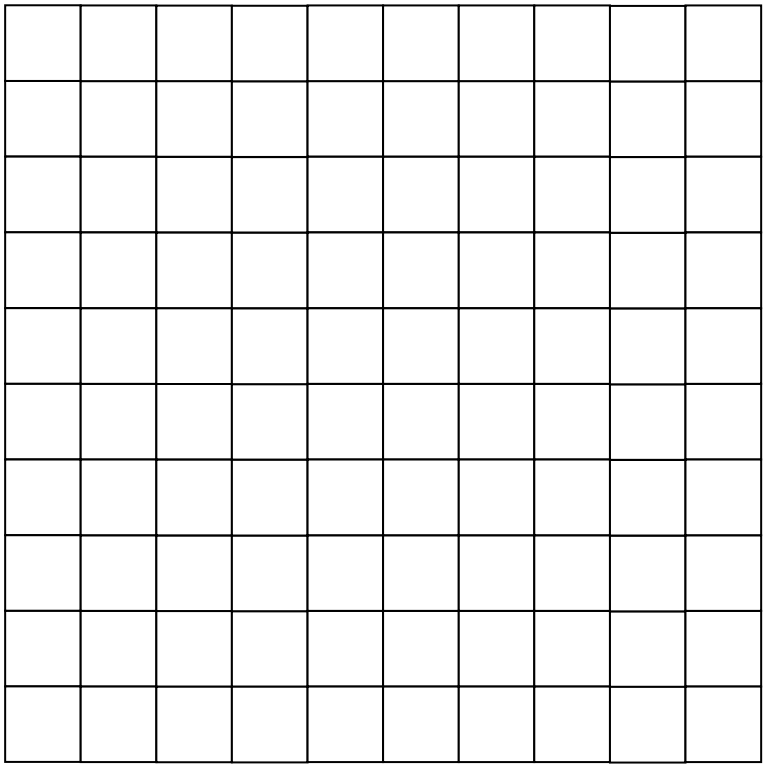
Appendix 1: Multibase Material (to be photocopied)











Appendix 2: Coin Value Sheet

Pennies	
1	$0.01
5	$0.05
10	$0.10
50	$0.50
100	$1

Nickels	
1	$0.05
5	$0.25
10	$0.50
50	$2.50
100	$5

Dimes	
1	$0.10
5	$0.50
10	$1
50	$5
100	$10

Quarters	
1	$0.25
5	$1.25
10	$2.50
50	$12.50
100	$25