Math Lesson – What Can I Do?!

Outcomes or Learning Goals

This Math lesson helps students develop the mathematical skills to develop financial planning and goal setting. It also will address reading and interpreting money values, data collection and data monitoring.

Grade Levels 7-10

This math lesson can be used for the following ELD contexts:

MAT1L

MAT2L

Context & Rationale

This lesson supports the ERGO Financial Literacy series book **What Can I Do?** This book tells the story of a girl who starts a fundraising initiative to raise funds to build community wells in Africa. Like the book, this math lesson is primarily intended for small to medium English Literacy Development class settings. It is important for students to become familiar with setting financial goals and creating a plan to achieve that goal. It is also an important job skill to know how to collaborate and work together as a team. A fundraising project provides students with a meaningful real life opportunity to practice all these skills. This lesson addresses the numeracy skills needed to address such projects.

Related Topics/Units

The story, *What Can I Do*? relates how successful and committed fundraising has the power to effect change. The Math section of the story supports issues of project management, collaboration and planning. Mathematically, this primarily concerns data management and numeracy. This math lesson is an entry to a broader project of a class taking on a similar scope of fundraising.

Expectations

- Solve problems involving money drawn from everyday situations (Gr. 9)
- Write money values, using correct units (e.g. 79 cents may be written as 79¢ or $0.79) (Gr. 9)
- Enter decimal numbers correctly on a numerical key pad (e.g. calculator, computer, ATM, cash register) and read and interpret decimal numbers correctly from a display (e.g. 16.5 means $16.50, not $16.05) (Gr. 9)
- Demonstrate the effective use of a calculator in operations with decimals (Gr. 9, 10)
- Verbalize their observations and reflections regarding money sense and ask questions to clarify their understanding (e.g. talk about their own and other students' solutions to problems) (Gr. 9)
- Communicate, orally and in writing, the solutions to money problems and the results of investigations, using appropriate terminology, symbols and form (Gr. 9)
- Solve problems involving fractions and percentages in practical situations (e.g. discount, sales tax) by converting to decimals and using a calculator (Gr. 9) See Follow up Work

Number Sense and Numeration Skills from the Ontario Mathematics Curriculum, Grades 1-8 (2005), that link well to this lesson and would support the needs of limited prior formal learning students are:

- Add and subtract decimal numbers to hundredths, including money amounts, using concrete materials, estimation, and algorithms (Gr. 5)
- Solve problems involving percent that arise from real-life contexts (Gr. 8) See Follow up Work

Lesson Sequence

Part 1 Minds on/Prior Learning (10 - 15 minutes)	What to Prepare
Activity Remind students of the book they have read, What Can I Do? Ask them to • Share experiences they have had before coming to Canada that were difficult, where resources or support would have made a difference. Discuss in small groups with elbow partners or small groups and share out • Look at the image page showing the money generating tools to raise funds • Thinking about the Water Ambassadors and their fundraising projects, what mathematical questions do you have? (Hint: Look at the amount of the cheque.) In making your question, consider the costs they had for supplies and materials. As a class try to generate as many different questions as you can	• Copies of the book

Assessment For Learning
• Observe for engagement and interest in topic
• Were the math skills identified reasonable?
• For each student identify from prior activities:
  • Number fact skills
  • Multiplication fact skills
  • Multiplication by 10, 100
  • Mental division of tens, hundreds (e.g. 900/3=300)
  • Understanding of %
  • Ability to multiply using % on a calculator	

Part 2 – Work on it (25 – 30 minutes) Work in small groups - 2-3 per group. • Develop one mathematical question. Imagine you are Mariam or one of her friends. Think your question through and present your calculations and answer. It likely you have some missing information (for example how much did Henna cost?)	**Before beginning work:** • Provide chart paper for group drawing and scribbling, also to prepare their share out. **Note:** • Engagement • Complexity of questions • Similarity • Any discussion of overhead or startup costs

Part 1 Minds on/Prior Learning (10 - 15 minutes)	What to Prepare
Part 2 – Work on it (25 – 30 minutes) **Assessment** • Note the complexity of the questions • Are the questions appropriate? • Can the questions be answered using information in the book? • Are the estimates of question elements that are not given reasonable • In working out answers, have they used appropriate mathematical procedures? • Have they used them correctly (i.e. number facts are correct) • Are they using reasonableness as a strategy to confirm answers? • Confirm/observe for Math competencies noted in warm-up exercise • Assess which of the follow-up questions can be reasonably used	
Part 3 – Conclude and Share Solutions (20 minutes or to carry to next class)	

Activity
 	
Each group prepares and rehearses a brief presentation on their work as follows:
 	
• Plan and rehearse your presentation. This should include
  • How you figured out your question
  • How you answered it
• Deliver your presentation
• Respond to questions about it	

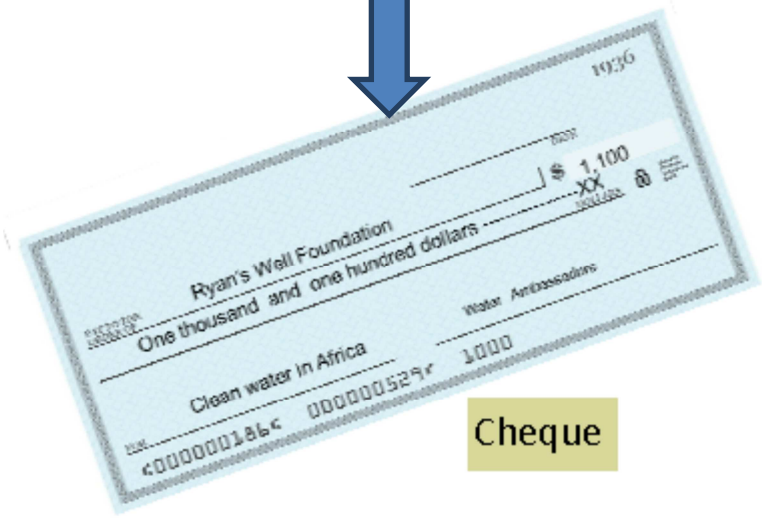
Follow up The question sheet is meant to be modified by the teacher according to class needs. There is likely a lot more here than can be used.	
Assessment For each student – notes on these skills: • Number fact skills • Multiplication fact skills • Multiplication by 10, 100 • Mental division of tens, hundreds, (e.g. 900/3=300) • Understand of % • Ability to multiply using % on a calculator • Ability to express mathematics problem solving orally • to express mathematics problem solving orally • Ability to show their work	

A Successful Fundraiser!

Bake Sale

Henna Design

Greeting Cards



Cheque

Follow-up work - Note to the teacher:

These questions range from fairly simple to complex. You are invited to select what is appropriate for your class, and develop additional similar questions for re-enforcement. In each case students need to practice describing their process orally and in writing.

Let's imagine that Miriam and her club raised $1500.

1. If the greeting cards made $900 profit and the bake sale sold $300, how much did the Henna make?
2. If the Henna made $400, the greeting cards made $500, how much did the bake sale make?
3. If the bake sale made $355, and the Henna made $465, how much did the greeting cards make?
4. If the bake sale, the Henna, and the greeting cards all made the same, how much did each make? Show how you worked this out
5. The bake sale made $300. The Henna and the greeting cards each made the same profit. How much did the Henna and Greeting Cards EACH make? Show how you worked his out
6. The Henna made $200. The Greeting cards made TWICE that amount. How much did the bake sale make?
7. The bake sale raised $900. The Henna made one third of that. How much did the Greeting Cards make?
8. The Greeting Cards made $300. The Henna made 3x that. How much did Bake Sale make?
9. What is the difference between questions 7 and 8?
10. Make a question up that is like #1 and give it to a classmate to solve
11. Make a question up that is like #5 and give it to a classmate to solve
12. Make a question up that is like #6 and give it to a classmate to solve
13. For each $10 of **profit**, the Bake sale had to spend $2. How much do they have to **sell** to make a $10 profit? How about $20 profit? $30?
14. From question 13, show how you figured out your answer. Show this on paper and a calculator.
15. From question 13, how much would they need to sell to make a $25 profit?
16. For each $10 of **profit**, the Greeting Cards need to buy $1.25 of materials. How much do they need to **sell** to make $10 of profit? $20? $300? $325? $475?

Another way to say #13: The Bake Sale has an overhead cost of 20%. (This means they must pay $20/100 or 20% for their costs.) Use this to solve the following problems:

17. The Henna has an overhead cost of 10%. How much do they need to sell to make $10 profit?
18. The Baking Sale has an overhead cost of 30%. How much do they need to sell to make $300 profit?
19. Miriam gave a cheque for $1100. Her total overhead cost for everything was 10%. How much did she have to sell to get the $1100 profit?
20. If hennas cost $2.75 each. Four (4) friends each get a henna and offer a $10 bill as payment. Is it enough?
21. Greeting cards come in a package of 2 for $3.50. How many can be bought for $20? How much change will they get?
22. The greeting card people can buy 250 sheets of cardstock (= heavy paper that can be used for cards) for $11.25 – before tax. Each sheet makes 2 cards. How much will each card cost for only the paper?

Reflect .....

Describe how you contributed to your group when you worked out the math questions to ask. What did you do well? What did you contribute? What skills did you show?

- How do you think your group did and why?
- What math skills did you already have that were useful for this activity?
- In the follow up work, which questions were easy? Challenging? Too difficult?
- What Math skills do you need to learn to do the 'challenging' questions easier?