THOMPSON RIVERS UNIVERSITY | Education & Social Work

Bachelor of Education (Elementary) & Bachelor of Education (Secondary) STEM/BETT Lesson Plan

Lesson Title: Picture Perfect Fundraising Word Problem | Lesson # 1 | Date: March 7th 2025

Name: Georgina Wilson | Subject: Mathematics | Grade(s): 5/6

Rationale:

This lesson follows the district numeracy assessment framework, guiding students through the stages of interpreting, applying, solving, analyzing, and communicating their mathematical thinking. By working through a real-world word problem, students engage in contextualized problem-solving, reinforcing their ability to break down complex problems into manageable steps.
Additionally, this lesson connects to ongoing learning in word problem strategies, multiplication, and division, providing an opportunity to strengthen mental math skills in a meaningful way. While not explicitly focused on area and perimeter, the problem's connection to measurements and spatial reasoning subtly reinforces concepts from our current math unit, helping students see how mathematical concepts interconnect.
By incorporating group work, a gallery walk, and written reflections, this lesson also fosters collaborative learning, critical thinking, and mathematical communication, all essential skills for developing strong numerical reasoning and confident problem-solving.

Core Competencies:

Communication	Thinking	Personal & Social
Communicating In discussions and conversations, I am focused and help to build and extend understanding. I am an engaged listener; I ask thought-provoking questions when appropriate and integrate new information. I can create a wide range of effective communications that feature powerful images and words, and I identify ways to change my communications to make them effective for different audiences. I use my understanding of the role and impact of story to engage my audiences in making meaning. I acquire information about complex and specialized topics from various sources, synthesize it, and present it with thoughtful analysis. **Collaborating** I play a role in collectively monitoring the progress of the group and adjust my contributions	**Critical Thinking and Reflective Thinking** I can ask questions and offer judgments, conclusions, and interpretations supported by evidence I or others have gathered. I am flexible and open-minded; I can explain more than one perspective and consider implications. I can gather, select, evaluate, and synthesize information. I consider alternative approaches and make strategic choices. I take risks and recognize that I may not be immediately successful. I examine my thinking, seek feedback, reassess my work, and adjust. I represent my learning and my goals and connect these with my previous experiences. I accept constructive feedback and use it to move forward. **Creative Thinking**	**Personal Awareness & Responsibility** I have valuable ideas to share. I am willing to explore controversial issues, and I can imagine and work toward change in myself and in the world. I can set priorities; implement, monitor, and adjust a plan; and assess the results. I take responsibility for my learning, seeking help as I need it. I use strategies for working toward a healthy and balanced lifestyle, for dealing with emotional challenges, and for finding peace in stressful times. I know how to find the social support I need. **Positive Personal and Cultural Identity** I understand that my characteristics, qualities, strengths, and challenges make me unique and are an important

as needed. I recognize the interdependence of our roles and draw on these to move us forward. I ask thought-provoking questions, integrate new information and various perspectives from others, and think critically about whose voices are missing. I can disagree respectfully, and I anticipate potential conflicts and help manage them when they arise. I give, receive, and act on constructive feedback in support of our goals, and I can evaluate and revise plans with other group members.	I can get new ideas that are innovative, may not have been seen before, and have an impact on my peers or in my community. I have interests and passions that I pursue over time. I look for new perspectives, new problems, or new approaches. I am willing to take significant risks in my thinking in order to generate lots of ideas. I am willing to accept ambiguity, setbacks, and failure, and I use them to advance the development of my ideas.	part of the communities I belong to (including people and places). I understand that what I value influences the choices I make and how I present myself in various contexts (including online). I can explain how I am able to use my strengths to contribute in my home and/or communities. Social Awareness and Responsibility I am aware of how others may feel and take steps to help them feel included. I maintain relationships with people from different generations. I work to make positive change in the communities I belong to and the natural environment. I can clarify problems or issues, generate multiple strategies, weigh consequences, compromise to meet the needs of others, and evaluate actions. I value differences; I appreciate that each person has unique gifts. I use respectful and inclusive language and behaviour, including in social media. I can advocate for others.

Big Ideas (Understand)

Computational fluency and flexibility with numbers extend to operations with larger (multi-digit) numbers

Learning Standards

(DO)	(KNOW)
Learning Standards - Curricular Competencies	Learning Standards - Content
Reasoning and analyzing - Use reasoning to explore and make connections - Estimate reasonably - Develop mental math strategies and abilities to make sense of quantities. Understanding and solving	• Multiplication and division to three digits, including division with remainders • Multiplication and division facts to 100 (emerging computational fluency) • Financial literacy — monetary calculations, including making change with amounts to 1000 dollars and developing simple financial plans • Relationships between area and perimeter

- Develop, demonstrate, and apply mathematical understanding through play, inquiry, and problem solving - Visualize to explore mathematical concepts - Develop and use multiple strategies to engage in problem solving Communicating and representing - Communicate mathematical thinking in many ways - Use mathematical vocabulary and language to contribute to mathematical discussions - Explain and justify mathematical ideas and decisions Connecting and reflecting - Reflect on mathematical thinking	

Instructional Objectives & Assessment

Instructional Objectives (students will be able to…)	Assessment
• SWBAT Interpret a real-world word problem by identifying key information and determining what is being asked. • SWBAT apply mental math strategies, including multiplication and division, to calculate costs, quantities, and total earnings. • SWBAT solve the problem using a chosen strategy and justify their mathematical reasoning. • SWBAT analyze different problem-solving approaches by participating in a gallery walk and reflecting on the efficiency of their strategy. • SWBAT communicate their mathematical thinking clearly by writing out the steps they took, explaining their reasoning, and reflecting on whether they could have solved it differently.	Observation: - I will observe how students identify key information in the problem and whether they can determine what is being asked. - I will watch for students' use of mental math strategies, noting if they apply multiplication, division, and estimation effectively. - I will look for student engagement and participation during the gallery walk, assessing whether they critically analyze different strategies. Communication: - I will listen to students explain their reasoning to peers and assess their ability to justify their chosen strategy. - I will assess how well students reflect on their strategy, discussing whether they could have solved the problem differently. Product: - I will assess students' written explanations of their problem-solving steps, checking for clarity and logical sequencing. - I will evaluate students' final mathematical calculations for accuracy and completeness.

	- I will review their final reflections to see if they can analyze their approach and consider alternative strategies.

Prerequisite Concepts and Skills:

- Students should be able to recall multiplication and division facts quickly and use them for calculations.
- Students need to understand how to multiply and divide larger numbers to solve for quantities and total earnings.
- Identifying key information and understanding what the problem is asking will be crucial to solving the word problem effectively.
- Using mental calculations for speed and efficiency will help students solve the problem without relying on written algorithms.
- Recognizing the value of money and calculating totals will help students in determining how much they need to raise and how to maximize their earnings.
- Students must be able to express their reasoning both verbally and in writing, demonstrating a clear understanding of their chosen approach.

Indigenous Connections/ First Peoples Principles of Learning:

Learning is relational, holistic, and reflective

In this lesson, students will work collaboratively in groups, share their strategies during the gallery walk, and reflect on the different approaches others have taken. This mirrors the relational and holistic nature of learning, where students not only solve the problem individually but also connect with their peers and engage in collective learning. The reflective component encourages students to think critically about their strategies, reinforcing the importance of reflection in understanding and growth.

Universal Design for Learning (UDL):

- Representation: I will use visual aids and diagrams (e.g., frame drawings) to clarify the problem and support comprehension.
- Action and Expression: Students will be able to express their work on white boards, paper, and verbally.
- Engagement: This lesson is connected to real-world contexts (fundraising) and I will encourage active participation through group discussions and the gallery walk.

Differentiate Instruction (DI):

- I will continuously check in on K making sure he is on task and working respectively with his group.
- I will try to have D show his mathematical thinking threw illustrating, if he is unhappy with that, I will give him a colouring sheet.

Materials and Resources

- White boards
- Cards
- Dry erase markers and erasers

Lesson Activities:

Teacher Activities	Student Activities	Time
Introduction (anticipatory set – "HOOK"): I will begin this lesson by reminding students of the word problem they solved last class where they had to plan a party. I will then tell them		

that today, following the same steps, they will be solving a fundraising question. I will first hand out the question and have students read it for about two minutes by themselves. Then I will read the question out loud to them. I will ask them: - "What is the question asking?" - "What information do we already know?" - "What do we need to figure out?" Then I will write key information from the word problem on the board: - Each student must raise <u>at least</u> $80 - Small frame: $15, requires 90 cm of wood - Large frame: $25, requires 110 cm of wood - Total wood available: 600 cm (I will explain to them that 30m is 300cm and there are two pieces of wood which means there is 600cm total) - I will also ask them if the width of the wood matters for this problem – then explaining how it doesn't affect the outcome of the problem and to only focus on the total amount of length of wood they will have.	Students are listening. Students are participating in discussion. Students are listening.	10 min
Body: I will hand out the District Numeracy Assessment table for them to use to solve the problem. Their first step will be to work independently, writing down what the question is asking them. Then I will split them up into random groups using playing cards, each group will go to a white board in the room where they will write in <u>words</u>, the steps they will follow to solve the problem. After 5 minutes I will then have the students do a gallery walk where they can read the other group's thought processes and steps, they might follow to solve the problem. I will ask them:	Students are working. Students are working in groups/doing a gallery walk.	30 min

• Did any group have a better or more efficient strategy? • Do you want to adjust your approach before solving? • What is the easiest way to check if the answer meets the $80 goal? I will then have the students go back to their desks where they will write out in <u>words</u> how they will solve the problem. Using either the strategy their group came up with or something they saw another group do. I will encourage efficient mental strategies like: • Breaking numbers into friendly parts (e.g., 90 = 9 tens, 110 = 11 tens) • Doubling/halving (e.g., if 2 frames use 180 cm, how much for 4?) • Estimating & checking (e.g., If 5 large frames use 550 cm, how much is left?) Then they will solve the problem writing out their work and what they think the best strategy for raising at least $80 would be.	Students are participating in discussion. Students are working.	
Closure: The last step is for students to reflect on their answer where they will write what strategy they used, what their final answer was, whether their method was the best? Why or why not? And could they have solved it differently? How? I will then have students share their approach with a partner and then share their any strategies with the rest of the class. I will highlight different strategies and discuss the most efficient one: Solution Examples: 1. Only Small Frames: o 600 ÷ 90 ≈ 6 frames o 6 × 15 = $90 2. Only Large Frames: o 600 ÷ 110 ≈ 5 frames o 5 × 25 = $125 3. Mix of Small & Large: o 4 large frames = 440 cm o Leftover wood = 600 - 440 = 160 cm o 1 small frame fits!	Students are completing their reflection. Students are participating in class discussion. Students are listening.	10 min

○ Profit = (4 × 25) + (1 × 15) = $115		

Organizational Strategies:

- I will arrange the groups randomly by using cards, students will pick a card from a pile and then find their group based on matching cards.
- I will have 8 white boards set up around the classroom to encourage vertical non-permanent surfaces for the best way to encourage mathematical thinking.
- I will set timers so students can use their time effectively.

Proactive, Positive Classroom Learning Environment Strategies:

- I will ask students questions to gauge their understanding of efficiency, such as:
- *Why did you choose this method?*
- *Did you see a different approach that might be more efficient?*
- *How did you decide which frames to make?*

- I will implement a gallery walk for students to be able to see how other groups solved the problem, this will allow them to pick the best strategy.
- I will ask guiding questions to help their thinking and also provide solution examples and encourage them of mental math strategies to simplify the division portion of the problem.
- I will convert metres to centimetres for them.
- I will have early finishers silent read as to not disturb those still working on the problem.

Extensions:

I could present students with a more complex word problem where they need to balance different types of products (e.g., small frames, large frames, and possibly even a third type) to raise money for an event or goal. This would require students to apply multiplication, division, and problem-solving skills in a more dynamic context.

Reflections (if necessary, continue on separate sheet):