

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

Lesson Title: _____ **CGI Lesson** **Lesson #** 1 (from 4 lesson unit) **Date:** April 6, 2020
Name: _____ Melissa Green **Subject:** Mathematics **Grade(s):** _____ 4

Rationale:

This lesson is important as it sets the stage for upcoming lessons in the unit for addition and subtraction variables. This first lesson in the unit is a soft introduction into a “missing number” and through the CGI share back some different ways of solving problems when there is a variable missing will be explore.

Core Competencies:

Communication	Thinking	Personal & Social
<ul style="list-style-type: none"> <i>Communicating</i> This lesson sees multiple communication skills both with other students, with the teacher, and with the whole class. Students are engaging in listening, the interpretation of information, and the consideration of diverse perspectives connected to their learning. 	<ul style="list-style-type: none"> <i>Critical and reflective thinking</i> Students will both be examining their own thinking and the thinking of other students through this lesson. This will be done through observation, sharing, and hands on learning. <i>Creative thinking</i> Through this lesson students will be engaging in the generation of ideas and strategies. Through hearing the thinking of other students they will be both evaluating their own thinking and further developing their thinking. 	<ul style="list-style-type: none"> <i>Personal awareness and responsibility</i> Throughout this lesson students will be expected to self-regulate their behaviours to meet the expectations of the learning time together. Students will self-advocate by expressing their individual learning needs and seek help as they need it. In the midst of learning new material students will learn how to self-persevere in the midst of engaging with new concepts.

Big Ideas (Understand)

Development of computational fluency and multiplicative thinking requires analysis of patterns and relations in multiplication and division.

Learning Standards

(DO)	(KNOW)
Learning Standards - Curricular Competencies	Learning Standards - Content
<ul style="list-style-type: none"> CC1 – Use reasoning to explore and make connections CC9 – Engage in problem-solving experiences that are connected to place, story, cultural practices, and perspectives relevant to local First Peoples communities, the local community, and other cultures CC14 – Reflect on mathematical thinking CC16 – Connect mathematical concepts to each other and to other areas and personal interests 	<ul style="list-style-type: none"> C1 - Algebraic relationship among quantities

Instructional Objectives & Assessment

Instructional Objectives (students will be able to...)	Assessment
<ul style="list-style-type: none"> TSWBAT complete the CGI story sheet and engage in conversation with the teacher as prompted. 	<ul style="list-style-type: none"> Formative <i>for</i> learning What: CGI story sheet

<ul style="list-style-type: none"> • TSWBAT share their strategy for solving the problem with the class. (as chosen and called upon.) • TSWBAT share with a partner. 	<p>How: Teacher will review the student work and engage in conversation.</p> <ul style="list-style-type: none"> • Formative <i>as</i> learning What: Students sharing their strategy, as chosen and called upon How: Students will learn from one another as sharing takes place. • Formative <i>as</i> learning What: Pair and Share How: Students will listen to a partner share and learn from them.
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Prerequisite Concepts and Skills:

- Students are familiar with the CGI model, routines, and expectations
- Students are familiar with using both words and numbers to describe changing patterns
- Students have grasped the core concepts of addition, subtraction, multiplication and division

Indigenous Connections/ First Peoples Principles of Learning:

“Learning involves patience and time.”

This lesson honours the fact that learning pre-algebraic and algebra skills will take both patience and time. Students will be given the time and space that they need individually to grasp these skills and experiences. When inviting students to respond and explain their sharing a generous wait time will be given to allow students the opportunity to consider and gather their thoughts and then share their thinking or ask their question. The math story problem shared in this lesson incorporates Indigenous ways of learning and content through fishing. The lesson involves reflection, collaboration, discussion, and storytelling.

Universal Design for Learning (UDL):

- Students will have expectations of work shared both verbally and through a sample where possible. This will meet the needs of both auditory and visual learners.
- Students will get to choose where to work, following classroom expectations and guidelines.
- The teacher will use a variety of assessment forms in order to reach each student.
- The activities can be adapted so that each student can be successful and reach their individual learning goals.

Differentiate Instruction (DI):

- Different levels/versions of practice sheets can be made to meet the learning goals of different students.
- Body breaks
- Break cards
- Brain breaks
- Fidgets
- Standing tables
- Flexible seating
- Headphones

Materials and Resources

- CGI Story sheets, printed
- Manipulatives in the math centre

Teacher Activities	Student Activities	Time
<p>Introduction (anticipatory set – “HOOK”):</p> <ul style="list-style-type: none"> Welcome students, tell students that you will be sharing a story and would like a few students to share the story back with the class after it's been shared. Share the CGI story/word problem: <ul style="list-style-type: none"> “James’ family went fishing on Tuesday and caught 17 fish. On Wednesday his family packed a lunch and went fishing for the whole day. On Thursday they counted the total number of fish they had caught that week so far; they had caught 53 fish. How many fish did James and his family catch on Wednesday?” Ask two students to share what they heard in the telling of the story (to both build understanding and avoid misunderstandings.) Ask the class if anyone heard anything different (after two students have shared). 	<ul style="list-style-type: none"> Students are paying attention. Students are listening to the story. Students raise their hand if they would like to retell the story and share if called upon. Students raise their hand if they have something to share and speak when called upon. 	5 min
<p>Body:</p> <ul style="list-style-type: none"> Ask: “I wonder if James’ family could have caught more than 50 fish on Wednesday? (this is to support students in going in the right direction and to avoid the misconception that students may think they need to add) Tell students that they are going to receive a CGI story sheet to solve the problem in the story and show their thinking and the strategies that they choose to use to help them solve this problem. Let students know that they can use words, pictures, math symbols or the math centre manipulatives to assist them. Ask students if there are any questions about what we’re doing next. Ask students to share what the expectations of our work block time are. Hand out CGI sheets Circulate around the classroom, make observations and take notes, wonder with students, ask students questions so they can explain their thinking further. Make list of 2-3 student names and ask these students to share their strategy with the rest of the class. Look for a student who used a model that showed they were seeking the missing number using an algorithm, i.e.: $17 + \underline{\quad} = 53 \rightarrow 53 - 17 = 36$ Ring the chime and invite students to finish up what they are working on and prepare for our sharing time. Call on the two or three students one at a time to share their strategy. Write their work on the board 	<ul style="list-style-type: none"> Students raise their hand to share and speak when called upon. Students are listening. Student raise their hand and share when called upon. Student work block. Students freeze and listen for instructions. They finish up what they are working on and prepare for the “share back” Pre-selected students share when called upon. The rest of the class is listening. 	<div>5 min</div> <div>10 min</div> <div>7 min</div>

as they share. • After the students have shared ask the class what similarities they see between the strategies? What differences do you see between the strategies? • Thank the students for their hard work and sharing. Let the class know that we will be learning more about math problems with a “missing number” over the coming weeks.	• Students raise their hand if they have something to share and speak when called upon.	
Closure: • Ask students to share with their seat partner about a time when they had to find a way to discover an unknown number or piece of information and how they worked to find the number/information. (cooking, sorting, creating, etc) • Collect CGI sheets while students are sharing with their partner. Take note of the conversations taking place.	• Students share with the seat partner.	4 min

Organizational Strategies:

- Use the chime to gain classroom attention
- Hand out CGI story sheets when it is time for the “work block”
- Collect CGI story sheets when students are sharing with their seat partner during the “closure”

Proactive, Positive Classroom Learning Environment Strategies:

- Depending on what block is taking place before this lesson a “brain break” may begin the lesson as a way of moving and refocusing into what is to come.
- Teacher will move around the room during the work block and provide encouragement and support to students.
- Students who are one task will be praised.
- Challenges will be dealt with in a respectful manner and not publically wherever possible.
- Expectations around behaviour will be reviewed before the work block begins.
- Wait seven seconds after asking a question to allow time for students to process and think about their answer or question.
- Teacher will spend more time near students who are distracting one another or off task and provide ongoing support. If necessary, students who are distracting one another will be moved to different work areas.

Extensions:

- This lesson will be extended further within the unit moving towards solving equations with unknown variables through number sentences.

Reflections (if necessary, continue on separate sheet):

N/A