THOMPSON RIVERS UNIVERSITY | Education & Social Work

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

Lesson Title: Fair Shares - Intro to Fractions | Lesson #: 1 | Date: February 6th 2025

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Rationale:

This is the first lesson in the unit on fractional concepts, which aims to provide students with strong foundational knowledge in fractional thinking before diving deeper. By connecting fractions to fair shares and visual representations (rather than using mathematical notation right away) students will develop a deeper understanding, while connecting fraction concepts to everyday life. The aim is that, through exploratory and hands-on approaches, students will be actively engaged in inquiry.

Core Competencies:

Communication	Thinking	Personal & Social
Communication: **Facet:** Acquiring and Presenting Information Students will demonstrate communication skills in this lesson by engaging during the before/number talk as well as during the "Equal or Not" class activity.	**Critical Thinking and Reflective Thinking:** **Facet**: Questioning and Investigating Students will engage their critical thinking and reflective thinking skills by exploring equal parts on their own in the during phase of the lesson. Additionally, they will use reflective thinking in the after phase, when they provide their exit tickets.	

Big Ideas (Understand)

Fractions are a type of number that can represent quantities.

Learning Standards

(DO) (KNOW)

Learning Standards - Curricular Competencies	Learning Standards - Content
• Develop, demonstrate, and apply mathematical understanding through play, inquiry, and problem solving • Use mathematical vocabulary and language to contribute to mathematical discussions	• Fraction concepts

Instructional Objectives & Assessment

Instructional Objectives (students will be able to…)	Assessment
● Students will be able to identify and create equal fractions using concrete pictorial/visual representations. ● Students will be able to communicate what makes a whole/a half/a quarter. ● Students will be able to understand fair shares when dividing an object.	**Observational**: ● Students will be observed in various points throughout the lesson to check for understanding of fair shares/fraction concepts: during the exploratory phase, and when identifying equal parts. ● **Exploratory Phase**: are students accurately cutting their circles into equal parts? Can they explain why it is an equal part? ● **Equal or Unequal:** Can students identify and communicate equal parts? **Product (Exit Ticket)** ● Students will be given a circular and rectangular paper and be asked to cut the circle a half and the rectangle into fourths by folding and coloring (after the language is introduced near the end of the lesson. ● Can students identify and create a half and fourth using multiple pictorial means? **Conversational:** ● Listen to students' reasoning and explanations during the during and after phase of the lesson.

Prerequisite Concepts and Skills:

This is an introductory lesson to fraction concepts, so there are no prerequisite skills necessary. However students will benefit from having some prior knowledge such as:

- Understanding that objects can be broken into parts (recognizing a whole vs a half pizza).
- Basic partitioning skills and understanding that equal means each piece is the same size.
- Early spatial reasoning: recognizing and comparing sizes of shapes and sections.
- Fairness and sharing concepts: when sharing, each person should receive the same amount.

Indigenous Connections/ First Peoples Principles of Learning:

Learning is holistic, reflective, reflexive, experiential and relational (focused on connectedness, on reciprocal relationships and a sense of place).

Experiential: this lesson provides an entry point for fractional concepts through hands-on exploration through subdividing tangible objects.

Relation and Real-world Connectedness: The lesson focuses on fair sharing, a concept deeply connected to community values and reciprocity. In many Indigenous cultures, fairness and equitable distribution of resources are central to collective well-being.

Holistic: Rather than introduce fractions as abstract concepts with mathematical notation, this lesson focuses on story, real-life connections and inquiry which ultimately supports multiple ways of knowing and understanding.

Universal Design for Learning (UDL):

This lesson incorporates multiple means of representation and engagement:

Story Based Hook: offers a means of engagement that incorporates different ways of knowing and understanding.
Hands-On Manipulatives: having physical representations of objects/fractions for students to explore not only engages kinesthetic learners, but is backed by research to be a better practice when teaching mathematical concepts. This allows students to explore, inquire and interact with concepts leading to deeper understanding.

Action/Expression: students could be given the option to create an exit ticket to demonstrate knowledge *or* be given the option to verbally communicate their understanding (multiple forms of expression).

Differentiate Instruction (DI):

Students who need more support:

- For students with lower fine motor skills, provide pre cut or folded shapes and have them color in the ½ or ¼ .
- Peer support: pair students who understand the concepts more readily with those who don't and have them work collaboratively.
- Offer 1:1 support.

High-Ceiling:

- Invite students who need a challenge/early finishers to demonstrate ⅓ or ⅛ to provide a high-ceiling.
- Have them create their own visual story using sharing/fraction concepts (they could share it during the next lesson/another class).

Materials and Resources

- Circular shape made of cardstock or construction paper for the bannock story.
- Premade circle and rectangle templates for during phase (extra copies in case of mistakes or students who want to explore other fractions).
- Scissors
- Blank paper for exit ticket

Lesson Activities:

Teacher Activities	Student Activities	Time
Before/Hook: **Bannock Story/Fraction Talk:** ● Gather students together (desks or in a circle). ● Introducing the story: "On a warm summer evening, you are sitting beside a warm, toasty fire and you have a big piece of bannock to share." ● Hold up a piece of circular construction paper/cardstock to represent the bannock. ● Engage students with questions:	● Listen to the story and visualize sharing ● Answer questions and predict how a circle can be evenly shared. ● Discuss what "equal" means in relation to a circle. ● Observe as the teacher folds and makes equal shares, and respond to incorrect examples.	10 Minutes

● "One of your friends comes to join you at the fire. How many people are at the fire? What would be a fair way to share this with one friend?" (Pause for answers, clarify what “fair share” means if needed). ● Fold the paper/cut in half to show two equal pieces: “Now we have two equal pieces to share!” ● "What if two more friends arrived? How many people are at the fire now? How can we share it fairly now?" (Fold/cut again into quarters). ● “Why do we think it's important that each piece is the same size/equal?” (Pause for answers). ● Additionally, it will be beneficial to ask questions like: “If I divide the bannock here, will that be even?” while showing incorrect examples. ● Explain what these divisions are called: “When we fold the paper into two equal sections that is called *half*. When we fold the paper into four equal sections, that is called *fourths* or *quarters*.” (Beneficial to write these words on the board for reference).		
During/Exploratory Phase: ● Have students go back to their desks (n/a if the story was done at seats). ● Hand out paper circle templates and rectangle templates). ● Instruct students – using what they learned about equal shares – to fold and cut their circle in half (two equal halves) and their rectangle into quarters (four equal quarters). ● If there is still some confusion/need for more clarification, this can be done as a guided exercise. ● Circulate the room and observe students creating halves and quarters, assisting if needed and answering any clarifying questions. ● **High-ceiling:** if students are ready to move on from halves and quarters, provide them with another circle/rectangle and ask them if they can figure out how to make 3 equal shares/8 equal shares.	● Listen to instructions before beginning the activity. ● Fold and cut their shapes into equal halves and quarters. ● Communicate with the teacher as they circulate, explaining their thinking and dividing the shapes. ● Demonstrate ability to communicate accurately a half and a fourth/quarter of an object.	15-20 Minutes

● This portion of the lesson will work for observational assessment/diagnostic assessment, helping to determine whether students can understand foundational fraction concepts before moving on to more in depth learning.		
After/Discussion: ● Have students clean up their desk areas ● Bring students attention back to hold a discussion/solidify understanding. ● “What was it called when we cut the circle into two pieces?” and “What was it called when we cut the rectangle into four pieces?”. ● "Did everyone’s quarters look the same? Why or why not?" ● "What happens if we cut unevenly—are they still fair shares?" ● “Which shape did you find harder to evenly divide? Why?” **Exit Ticket:** ● Instruct students to draw on a blank piece of paper a circle. “Draw how you would evenly/fairly share this with four friends.”	● Share observations during the class discussion. ● Complete and hand in the exit ticket (circle drawing, divided into fourths).	10 Minutes

Organizational Strategies:

Prep and Setup:
Organize materials ahead of time – paper, scissors, markers etc.

During:
Use clear instructions and modeling, such as: how to fold and cut paper. (If you think the students can handle it, it may be better to not model, as this is designed to have them inquire and think critically on their own how to divide shapes evenly).

Use clear transitions when moving from task to task. However, if students are actively engaged, allow them time to fully explore before moving on (don’t rush learning!).

After:
Clean-up routine: however this looks in the classroom (students clean up their own station/special helper collects scissors, markers etc).

Proactive, Positive Classroom Learning Environment Strategies:

Equal + Active Participation – Ensure all students interact by asking open-ended questions (e.g., “Who has another way to share the bannock?”).

Encouragement & Positive Reinforcement – Praise effort and thinking, not just correct answers (e.g., “I love how you explain your reasoning!”).

Exit Ticket – Use exit tickets as a low-pressure way for students to demonstrate learning without fear of being wrong.

Extensions:

This lesson could extend further into fractional concepts easily.

- More hands-on practice using other objects and shapes such as: unifix cubes or geoboards. This allows students to practice and explore these concepts in different contexts which leads to deeper learning.

Reflections (if necessary, continue on separate sheet):

I chose this particular topic after reading the fractions concepts chapter in our textbook. I was particularly inspired by a number of things, such as not introducing mathematical notation right away and having students explore fractions pictorially/symbolically first in a number of ways. Initially, I found it difficult to come up with a task that engaged inquiry and thinking without being too complex for an intro lesson. In my opinion, the task in this lesson still isn't particularly strong, but I've been working on not rushing learning and taking time to dive into concepts slowly (which I think is particularly important in primary grades with foundational concepts). In saying that, I think this lesson could be extended further throughout a unit to incorporate more in-depth tasks that promote higher order thinking using a variety of contexts (like geoboards for example). Originally, I was going to situate this lesson later in the unit, and have the students use fraction playing cards to play a fraction match-up game (comparing fractions with the same denominator). However, I actually think it is more challenging to introduce a unit than to write a lesson for an imaginary class and simply assume they understand the prerequisite concepts necessary, therefore I wanted to challenge myself to do so. An area of strength in this lesson is connecting math concepts to real-world concepts via storytelling, which I believe Indigenizes the content of the lesson by incorporating different ways of knowing and understanding (pedagogy through story).