LESSON PLAN

Grade Level:	3	**Lessons:**	2
Subject Area:	Mathematics	**Dates:**	
Big Ideas	1. Fractions are a type of number that can represent quantities.	**Time per Lesson:**	60 minutes / lesson

Major Learnings	
Curricular Competencies (What students will be able to DO.)	**Content** (What students will KNOW.)
CC1) Use reasoning to explore and make connections	C1) Fraction concepts.
CC2) Develop mental math strategies and abilities to make sense of quantities	C2) Students identify common characteristics of a given set of fractions.
CC3) Develop, demonstrate, and apply mathematical understanding through play, inquiry, and problem solving	C3) Student develop a deeper understanding of fractions by cutting of folding a whole into equal parts.
CC4) Use mathematical vocabulary and language to contribute to mathematical discussions	C4) Sort a given set of diagrams of regions into those that represent. equal parts and those that do not, explain sorting.

[C] - Communication	[CN] – Connections	[ME] – Mental Math	[PS] – Problem Solving
[R] - Reasoning	[T] - Technology	[V] - Visualization	

Core Competencies: [C, CN, ME, R, V]

Communication:

1. Connect and engage with others (to share and develop ideas)

Students engage in informal and structured conversations where they listen, contribute, develop understanding and relationships.

2. Acquire, interpret, and present information (includes inquiries)

Students inquire into topics that interest them. Examples include “show and tell,” and explaining a concept.

Critical Thinking:

1. Analyze and critique

Students learn to analyze and make judgments about a process. They consider purpose, focus on evidence, and use criteria (explicit or implicit) to draw conclusions and make defensible judgments or assessments.

2. Question and Investigate

Students learn to engage in an inquiry and investigation where they identify and explore questions or challenges. Some critical thinking activities focus on one part of the process, such as questioning.

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General Outcome:	**Materials:**
▪ Demonstrate an understanding of fractions. [CC2, CC3, CC4, C2, C3, C4] ▪ Students make connections to basic fractions. ▪ Students will recognize benchmark fractions: 1, , 1/2 , 1/3, 1/4, 1/5. ▪ Use reasoning to explore and make connections. ▪ Students understand and apply the words: *Numerator* *Denominator* *Fraction* *Benchmark Fractions* ▪ Model and explain the meaning of numerator and denominator	Vocabulary Cards (Appendix C) **<u>Manipulatives:</u>** Rainbow Fraction Squares  Deck of Cards x 10 Green Masking Tape  Graphic Organizer: Fraction Bar Model (Appendix A) Benchmark Fraction Poster for Word Wall Benchmark Fraction Handouts (Appendix B) Dry Erase Boards x 24 Whiteboard Markers x 24 Erasers x 24 Observational Checklist Math Journals

STUDENT ACTION	TEACHER ACTION
	Introduction (PREP PRIOR TO CLASS) Prepare for the partner numerator / denominator activity by placing 1 foot strips of tape on the floor throughout the classroom.

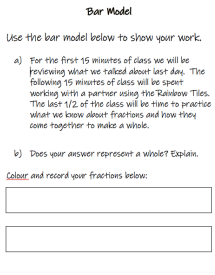
LESSON PLAN

Welcome students! Follow along with me as I read what is on the whiteboard…

Teacher Talk → "Think Aloud"- drawing a picture for students to visualize what you are talking about while you demonstrate what you are thinking, talking aloud as you go.

For the 1/4 of the class we will be reviewing what we talked about last day. The next 1/4 of the class will be spent doing a partner activity with the Rainbow Tiles. The last 1/2 of the class will be time to practice what we know about fractions and how they come together to make a whole.

Graphic Organizer Handout:
Fraction Bar Model


Bar Model

Use the bar model below to show your work.

a) For the first 15 minutes of class we will be reviewing what we talked about last day. The following 15 minutes of class will be spent working with a partner using the Rainbow Tiles. The last 1/2 of the class will be time to practice what we know about fractions and how they come together to make a whole.

b) Does your answer represent a whole? Explain.

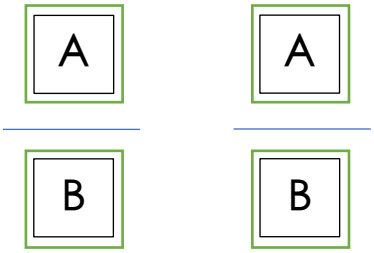
Colour and record your fractions below:

Students complete the bar model from the story above and then engage in **DISCUSSION.**

REVIEW Terms:

- *Numerator*
- *Denominator*
- *Fractions*
- *The Benchmark Fractions*

PARTNER ACTIVITY



Activate and Engage

THINK ALOUD:
Welcome students!
For the 1/4 of the class we will be reviewing what we talked about last day. *(Okay, I know that class is 60 minutes long, and I know that ½ of the class is 30 minutes…so ¼ would be ___.)* The next 1/4 of the class will be spent doing a partner activity with the Rainbow Tiles. *(So, ¼ of the class would be ___, which is when I will be working with my partner using the Rainbow Tiles.)* The last 1/2 of the class will be time to practice what we know about fractions and how they come together to make a whole. *(If I draw ½ here, I know that I am spending ____ minutes practicing fractions.)*

NOTE: Gives students the choice to work with a partner to solve the problem.

DISCUSSION

Read the story problem again, model (or ask for a student volunteer) and colour and record the fraction according to what the problem is asking.

Ask for a volunteer to come up to the whiteboard to ***draw and explain*** how the bar graph model represents a whole.

REVIEW the terms with students from last day **USING VOCABULARY CARDS** (Appendix C) and put students into pairs for the partner activity.

PARTNER ACTIVITY
Numerator and Denominator REVIEW.

1. Each student draws a card.
2. Numerator: Card between 2-5 is drawn, student A stands above the line of green tape.

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TRANSITION	3. Denominator: Card between 6-10 is drawn, student B stands under the line of the green tape. 4. **OBSERVE** to see if students stand in the correct position. ***Numerator has to be smaller than the denominator. If students understand this concept, move on.*** **TRANSITION** to desks so students can review the activities from last day and prepare for partner activity.
THINK: Brainstorm *Where have you seen fractions before? At school? At home? In the community?* Benchmark Fractions: • Refer to Appendix A • Visual on document camera or using SMARTBoard Appendix B **PAIR:** Partner Activity Rainbow Fractions Squares ***MODEL*** *Instructions:* *With a partner, lay out the squares.* *Show me a whole, 1/2, 1/4, 1/3.* *How many 1/4 to make a whole?* *How many 1/8 to make 1/2?* *With your partner, come up with three different fractions that are equal to one another.* ***REFER*** to the Benchmark Fraction Poster on the Math Word Wall or from your Math Journal.	**Explore and Discover** **THINK-PAIR-SHARE ACTIVITY:** 1) POST Brainstorm Activity on SMARTBoard 2) Benchmark Fractions REVIEW – *Do you see a benchmark fraction in our bar model? Which fractions are they?* **PARTNER ACTIVITY** Rainbow Fraction Squares Students find the 1 whole, 1/2, 1/3, 1/4. 1. **MODEL**: Using the document camera, demonstrate what you are expecting students to do with their partners. 2. **CLARIFICATION**: Ask a student to explain what they need to do for this activity. (Write the instructions on the white board for students to refer to.) 3. Any questions? **WAIT** and **LISTEN**. 4. BEGIN partner activity. ***POST*** the Benchmark Fraction Poster on the Math Word Wall.

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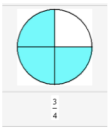
GAME – Rainbow Fraction Tile

Review the Rules of game play →

SHARE:
Students are invited to share their fractions with the class; explaining their process.

EXTENSION: (Appendix D)

How many equivalent fractions can you create for $\frac{3}{4}$?



$\frac{3}{4}$

Explain why they are equivalent. (Discussion question)

Organize and Integrate

In the same groups, students prepare to play:

GAME – Rainbow Fraction Tile

How to Play: EQUIVALENT FRACTIONS

1. In pairs, have the students place the 1/2 tile on one side of their desks and the rest of the tiles along the other side.
2. Combine fractional parts to make one-half.
3. As each equivalent fraction is found, one person writes the combinations on a piece of paper, the other person, draws a picture to match.
4. This will illustrate that they are equivalent to one- half. Students may suggest that combinations of different tiles such as 1/4 and 2/8 are equivalent to one-half.
5. Accept these responses as well.
6. Ask students to work together to find tiles equivalent to:
   a. one-third (2/6, 4/12)
   b. one-quarter (2/8, 3/12)
   c. one-fifth (2/10)
7. Ask students to share their findings.

Circulate the room as students play the game, offering assistance when needed but also challenging students to think deeper by asking questions.

For students who finish early or need a challenge, have them work on the extension questions in Appendix D.

←

Whiteboard Formative Assessment Activity
Student helper of the day hands out the whiteboards, markers and erasers.

Closure

Whiteboard Formative Assessment Activity

1) One student hands out the dry erase boards, markers and erasers.

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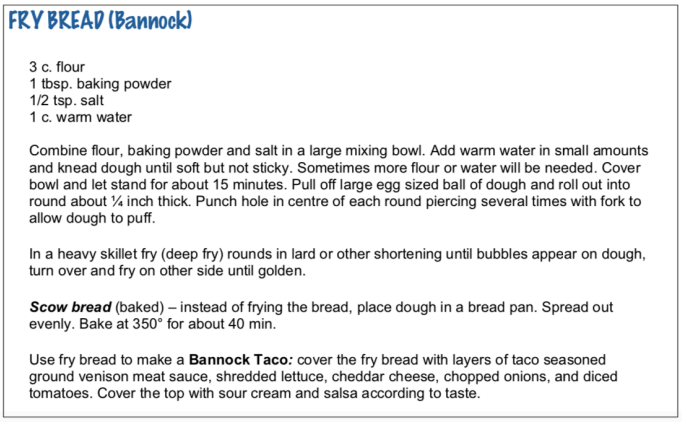
Students draw their answers and hold up their dry erase board when finished. Students watch as the teacher draws an object on the whiteboard. Students write down the fraction it represents. **Student Challenge** Equivalent Fractions → What is another way to represent the following fractions? → 1/2 , 1/3, 1/4 *Students may use their Benchmark Fraction Handout if needed.*	2) Call out different fractions to review what was learned today. ▪ Use Benchmark fractions sheet and call out fractions that students practiced during the lesson. ▪ Students draw any shape to match the fraction that is called out. ▪ Record student responses on observational checklist. ***Be sure to post Vocabulary Cards and Benchmark Fraction Poster on Math Word Wall*** 3) Draw a visual representation of a fraction for students. ▪ Record student responses on observational checklist. 4) Challenge Students ▪ Using the Benchmark Fraction Reference Sheet what is another way to represent: → 1/2 , 1/3, 1/4

First People's Principles of Learning:

- Invite an Elder to the classroom to talk about bannock. In groups, student make bannock to share with the Elder.
- Students get to apply what they know about adding fractions by doubling the batch to ensure there is enough for everyone in the class.



FRY BREAD (Bannock)

3 c. flour
1 tbsp. baking powder
1/2 tsp. salt
1 c. warm water

Combine flour, baking powder and salt in a large mixing bowl. Add warm water in small amounts and knead dough until soft but not sticky. Sometimes more flour or water will be needed. Cover bowl and let stand for about 15 minutes. Pull off large egg sized ball of dough and roll out into round about ¼ inch thick. Punch hole in centre of each round piercing several times with fork to allow dough to puff.

In a heavy skillet fry (deep fry) rounds in lard or other shortening until bubbles appear on dough, turn over and fry on other side until golden.

Scow bread (baked) – instead of frying the bread, place dough in a bread pan. Spread out evenly. Bake at 350° for about 40 min.

Use fry bread to make a **Bannock Taco***:* cover the fry bread with layers of taco seasoned ground venison meat sauce, shredded lettuce, cheddar cheese, chopped onions, and diced tomatoes. Cover the top with sour cream and salsa according to taste.

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Universal Design for Learning: (ELL, FNMI, Gifted Students, Dyscalculia, ADHD)

- Think Aloud (visualization, making connections)
- Manipulatives (experiential)
- Partner Activities (Think-Pair-Share)
- Interactive Component (whole body movement for learning)
- Vocabulary Cards (visualization, comprehension)
- Graphic Organizer (organize thoughts, process learning)
- Benchmark Fraction Handout (visualization)
- Open Ended Questions (deeper thinking)
- Math Journals (reflection, relationships, communication)

SIMPLIFICATION	**EXTENSION**
Use the magnetic Rainbow Fraction Tiles and model what is expected of students. Encourage students to ask questions if they do not understand. After all, fractions are a hard concept and need a lot of practice.	Put students into groups of 4 and have them create their own fraction game. Groups teach the rest of the class how to play their game.

ASSESSMENT TOOLS (Appendix E)	
Formative Assessment → **Dry Erase Boards** Students are asked to draw different benchmark fractions in the shape of their choice. **Summative Assessment →** **Math Journals** Students record benchmark fractions in their math journals. (Today I learned that ½ is a benchmark fraction. I can draw it… an equivalent fraction is…) Sentence starters and graphic organizers are available for students if they require them.	**<u>Formative Assessment</u>** **Technique Used:** Dry Erase Boards **Gather and Record:** Observational Checklist **Observational Assessment Checklist** Based on the dry erase board results, I can observe students "at a glance" and use the observational checklist to record student understanding. **<u>Summative Assessment</u>** **Technique Used:** Math Journals **Record:** read student journals to check for understanding and if they have recorded reflections from the lesson.

LESSON PLAN

Teacher Reflection:

- What worked well:
- What did not work well:
- Changes I will make for next time:

REFERENCES:

https://www.teacherspayteachers.com/FreeDownload/Benchmark-Fraction-Chart-707284
www.learningresources.com

Dodge, J. (2009). *25 Quick formative assessments for a differentiated classroom*, Broadway,New York: Scholastic Inc.

Vocabulary Cards. https://www.teacherspayteachers.com/FreeDownload/Fractions-Vocabulary-Activities-Free-3157652

Cooking with Fractions: http://www.fnesc.ca/wp/wp-content/uploads/2015/08/PUB-LFP-Math-First-Peoples-8-9-for-Web.pdf

Teaching Mathematics in a First Peoples Context: http://www.fnesc.ca/wp/wp-content/uploads/2015/08/PUB-LFP-Math-First-Peoples-8-9-for-Web.pdf

Appendix A

Bar Model

Use the bar model below to show your work.

a) For the first 15 minutes of class we will be reviewing what we talked about last day. The following 15 minutes of class will be spent working with a partner using the Rainbow Tiles. The last 1/2 of the class will be time to practice what we know about fractions and how they come together to make a whole.

b) Does your answer represent a whole? Explain.

Colour and record your fractions below:

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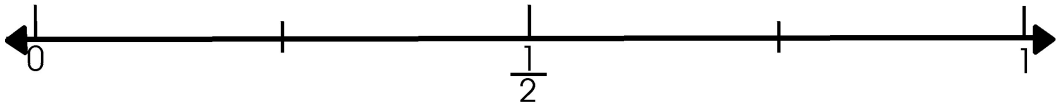
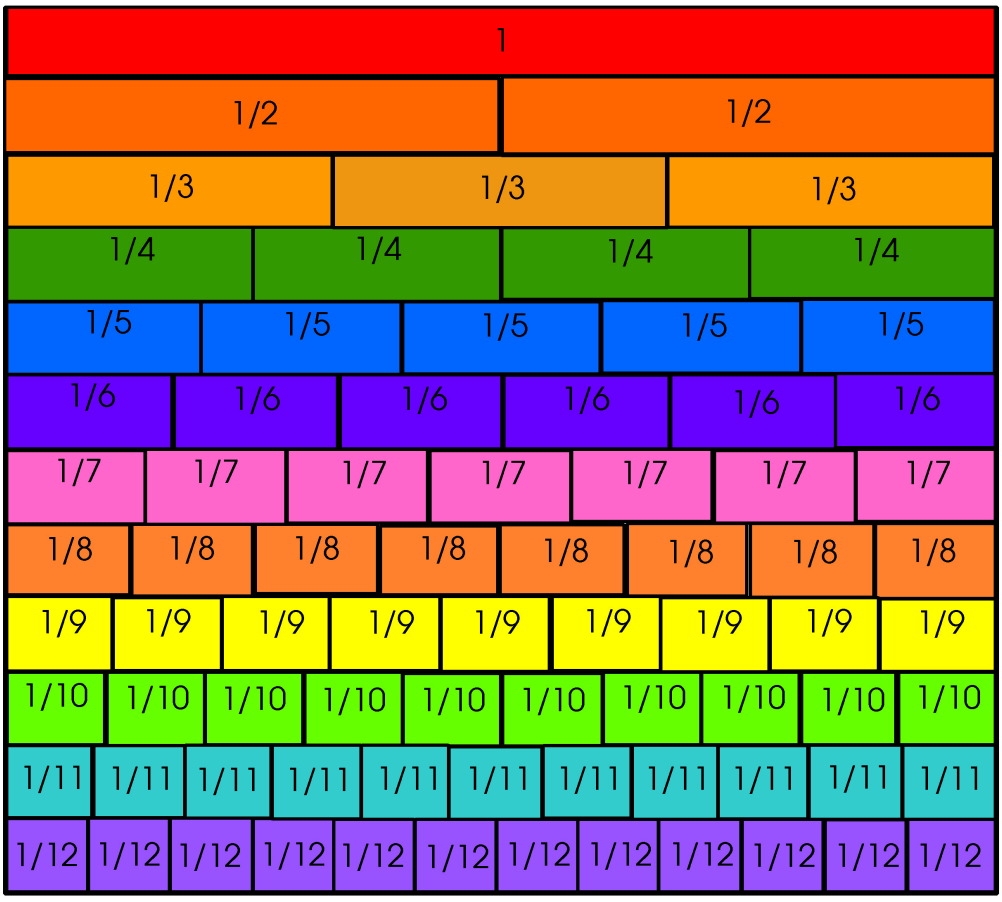
Appendix B

Benchmark Fractions





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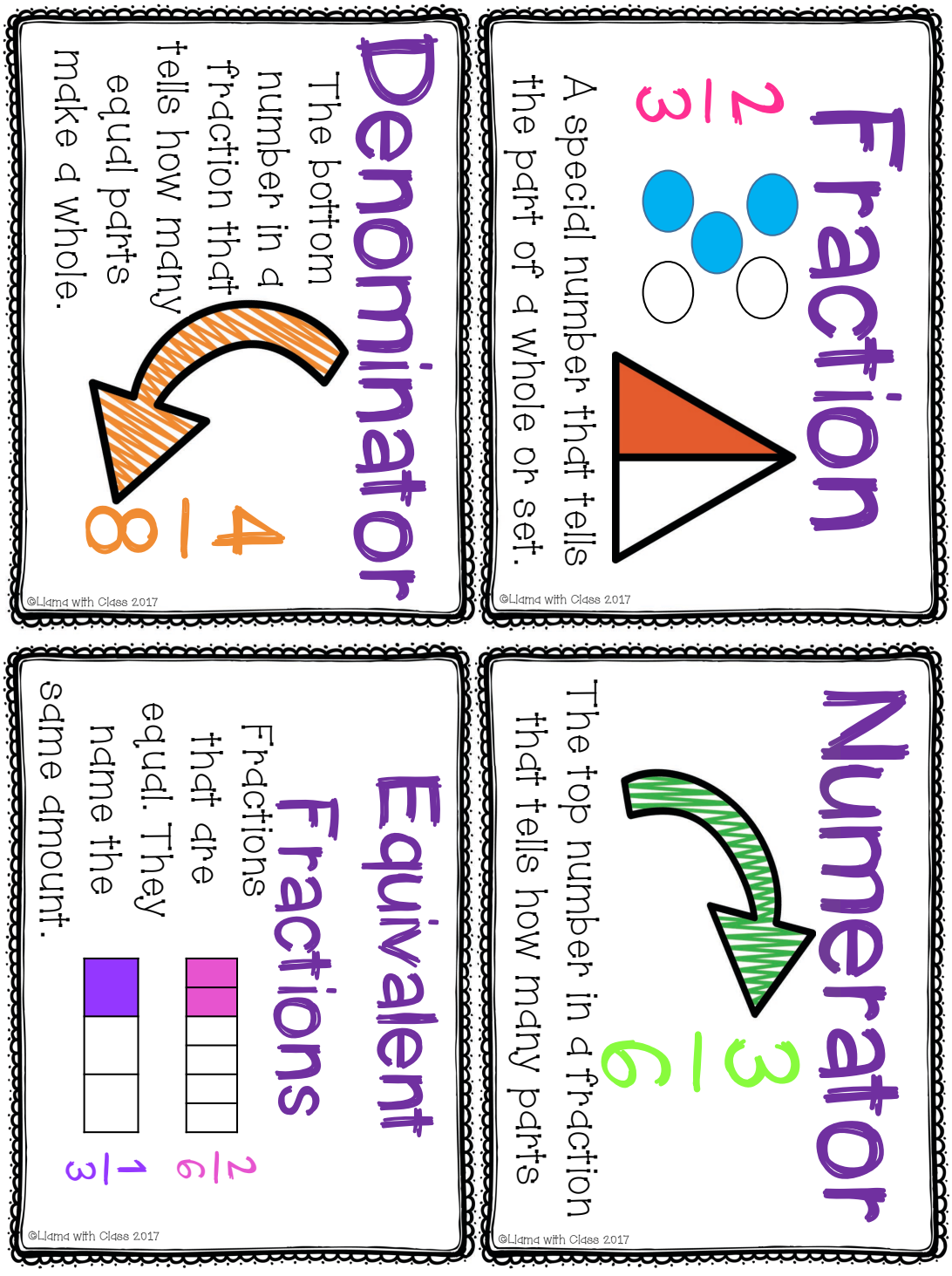
Appendix C

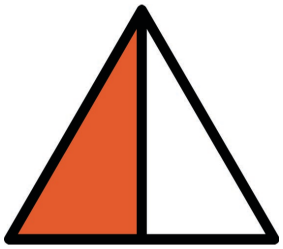


LESSON PLAN

Half

1 of 2 equal parts of a whole.

$\frac{1}{2}$



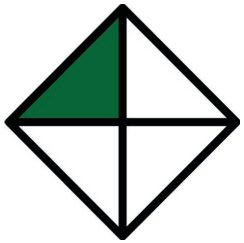
Third

$\frac{1}{3}$

1 of 3 equal parts of a whole.

Fourth

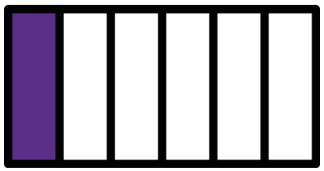
$\frac{1}{4}$



1 of 4 equal parts of a whole.

Sixth

$\frac{1}{6}$



1 of 6 equal parts of a whole.

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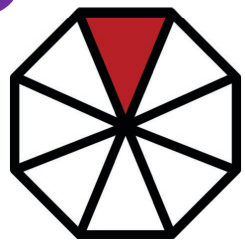
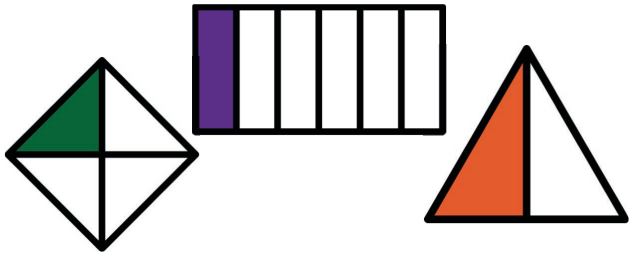
Eighth

$\frac{1}{8}$



1 of 8 equal parts of a whole.

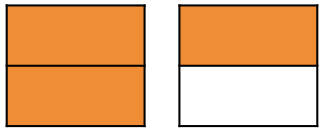
Unit Fraction



A fraction that has 1 as the numerator.

Mixed Number

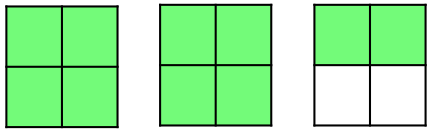
$1\frac{1}{2}$



A number that includes a whole number and a fraction

Improper Fraction

$\frac{10}{4}$



A fraction that is larger than 1. The numerator is larger than the denominator.

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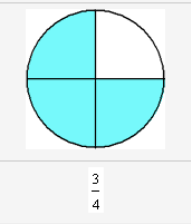
Appendix D

Vari-Abilities Discussion
Focus: Equivalent Fractions

Bonus Question #1:

How many equivalent fractions can you create for $\frac{3}{4}$?



Explain why they are equivalent. (Discussion question)

Bonus Question #2:

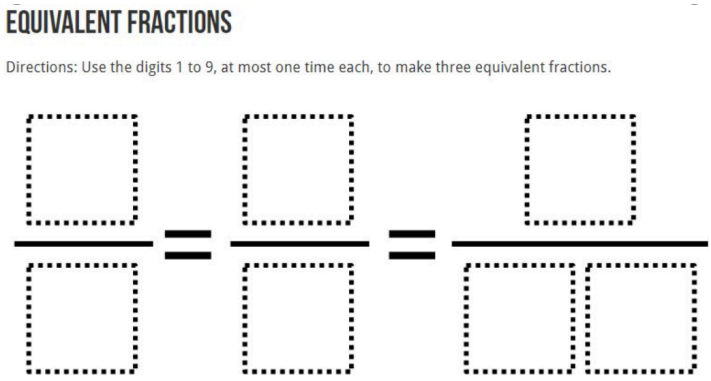
How is $\frac{2}{3}$

related to $\frac{4}{6}$?

LESSON PLAN

Vari-Abilities Discussion
Focus: Equivalent Fractions

Bonus Question #3:



Resources:

https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Equivalent-Fractions/

https://www.mathgoodies.com/lessons/fractions/equivalent

https://twitter.com/robertkaplinsky/status/1093315924181032960

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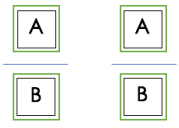
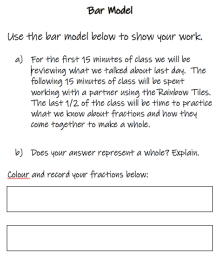
Appendix E

GRADE 3 ASSESSMENT COMPONENT

BIG IDEA	**Assessment Focus: Fraction Concepts**	
Fractions are a type of number that can represent quantities.	• fractions are numbers that represent an amount or quantity. • recording pictorial representations of fraction models and connecting to symbolic notation	
Assessment FOR Learning	**Assessment OF Learning**	**Assessment AS Learning**
Formative Assessment: Assessing learning on an ongoing basis through: **Classroom Observations** **Descriptive Feedback** Focusing on collaboration with the student to improve and support learning. **Whiteboard Assessment Activity** • students are asked to draw different benchmark fractions in the shape of their choice https://teachingmadepractical.com/using-whiteboards-in-the-classroom/ **Movement Activities** Numerator/Denominator Partner Activity  Fraction Hop Scotch http://capturing-classroom-ideas.blogspot.com/2013/07/fraction-hopscotch.html	**Summative Assessment** Evaluation of learning at the end of a lesson or unit. Written work such as: **Math Journal Entries** • Students record benchmark fractions in their math journals. (Today I learned that ½ is a benchmark fraction. I can draw it… an equivalent fraction is…) • Sentence starters and graphic organizers are available for students if they require them **Exams** **Worksheets** **Graphic Organizers**  Bar Model Use the bar model below to show your work. a) For the first 15 minutes of class we will be reviewing what we talked about last day. The following 15 minutes of class will be spent working with a partner using the Rainbow Tiles. The last 1/2 of the class will be time to practice what we know about fractions and how they come together to make a whole. b) Does your answer represent a whole? Explain. Colour and record your fractions below: **Observational Checklist**	**Self-Assessment** Using graphic organizers to reflect on learning. • making connections to learning Example: Exit Ticket **Peer Assessment** Using feedback from peers to make improvements for better understanding. **Think – Pair – Share Activity** • brainstorming and coming up with ideas using background knowledge • discussing these ideas/knowledge with a partner, perhaps learning something new • sharing something new that they have learned

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First Peoples Principles of Mathematical Teaching →	**Respecting the learner** – Present mathematics problems of various sorts in varied ways (visual, oral, role-play, and experiential problems as well as word and symbol problems).
Core Competency Focus ↓	**Determining Student Success** ↓
Communicating Connecting and engaging with others. Students engage in informal and structured conversations in which they listen, contribute, develop understanding and relationships, and learn to consider diverse perspectives. This facet of communication is closely linked to the building and sustaining of relationships at home, at school, in the community, and through social media.	**Learning Outcomes** • Students will be able to demonstrate understanding that fractions are numbers and that they represent an amount or quantity during the Equivalent Fraction/ Rainbow Tile Game and when making bannock. • Students will be able to record pictorial representations of fraction models and connect them to symbolic notation in the graphic organizer in the Bar Model Activity and during the Whiteboard Assessment Activity. • Students will have opportunities to explore and create fractions with concrete materials using the Rainbow Fraction Tiles. • Students will be able to describe how fractions can represent part of a region, set, or linear model by using background knowledge and by making connections.

Resource: http://www.learnalberta.ca/content/mewa/html/assessment/types.html