

## Plan for Students' Learning Elementary Math Lesson

<b>Planner's Name:</b> Jasey Gearhart and Kallie Honstine <b>Topic:</b> Fractions as Numbers <b>Title of Lesson:</b> Finding Fractions Everywhere! <b>Grade Level:</b> 3rd
<b>Academic Standards for Lesson</b>
CC.2.1.3.C.1 Explore and develop an understanding of fractions as numbers.
<b>Essential Question</b>
How can we understand fractions as numbers?
<b>Objectives (as many as needed for the lesson, usually no more than three):</b>
<ul style="list-style-type: none"> <li>• Students will be able to partition whole objects into equal parts.</li> <li>• Students will be able to assign fractions to parts of an equally partitioned object.</li> <li>• Students will be able to explain their reasoning/thought processes and show their work.</li> </ul>
<b>Standard(s) of Mathematical Practice (be specific)</b>
<ul style="list-style-type: none"> <li>• 1: Make sense of problems and persevere in solving them. (I can solve problems without giving up.)</li> <li>• 2: Reason abstractly and quantitatively. (I can think about numbers in many ways.)</li> </ul>
<b>Prerequisite Skill(s)</b>
<ul style="list-style-type: none"> <li>• Foundational counting skills.</li> <li>• Foundational understanding of basic, 2-dimensional shapes.</li> <li>• Adding and subtracting skills.</li> <li>• Ability to recognize equal parts in a given shape.</li> </ul>
<b>Learning Activities</b>
<p>1. <b>Introduction/Activation Strategy:</b></p> <ul style="list-style-type: none"> <li>• Give students circles made out of construction paper and scissors. <ul style="list-style-type: none"> <li>▪ “I am passing out paper circles and scissors that we will be using in our lesson today.</li> </ul> </li> <li>• Go over what a fraction is. <ul style="list-style-type: none"> <li>▪ “Today we are going to be discussing fractions. Does anyone think they know what a fraction is?” <i>Students share thoughts and discuss as whole class.</i></li> <li>▪ “We use fractions to represents parts of a whole object. A fraction can look like this,” <i>Write a simple fraction on the board.</i></li> <li>▪ “The bottom number of a fraction, the denominator, represents the number of equal pieces the whole object is divided into. The top number of the fraction, the numerator, represents the number of pieces we are analyzing.”</li> <li>▪ “Thumbs up if you’re with me, thumbs in the middle if you kind of get it, and thumbs down if you’re totally lost.” <i>This is used to guage which students will need more help/guidance during next portion of lesson.</i></li> </ul> </li> </ul>

“Okay! I can see where everyone is at. It is okay if you’re not understanding because this next step in our lesson today will provide some real-life examples for you of what a fraction is!”

## 2. Instructional Strategies/Learning Tasks:

### a. Model/Explicit Instruction:

- Ask students for an example of something in real life that is a circle. (For example, a pie.)
  - “What shape do I have drawn here?” *Whole class responds.* “Who can give me an example of something in real-life that is shaped like a circle?” *Ask for multiple examples until you come across one that would realistically be divided for one reason or another, such as a pie.*
- Create a story problem.
  - “Class, I want to share this pie equally between myself and 3 of my friends. What should I do if I want to share this pie equally?”
  - Have student draw on board what division of the pie would look like.
  - Ask student why they divided the pie the way they did.
  - Ask class if they agree with what student drew, and why or why not.
  - After discussion: “Now that we have divided the pie into equal pieces, we can use fractions to state how many of the piece we are analyzing, or want to look at. Let’s write the number for the bottom of the fraction first! What is the bottom number of a fraction called?” *Wait for students to say denominator.* “Yes! And what does the denominator represent in a fraction?” *Ask for volunteers to answer.* “The denominator represents the total number of pieces the object is divided into. If our pie is divided into 4 pieces, what number are we going to write for the bottom of our fraction?” *Have whole class answer. Count the number of pieces in the pie out loud and then write 4 in the bottom of the fraction.*
  - “Now let’s take a look at the top number in our fraction. What do we call the top number in a fraction?” *Wait for students to say numerator.* “That’s right! The top number is called the numerator. We know that the numerator represents the number of pieces we are analyzing. So, if I take out 1 piece of pie for myself, and I want to make this fraction represent the amount of the pie I know I have, what number am I going to write as the numerator?” *Ask for volunteers to answer. Have students explain reasoning behind answers.* “Yes, the number we would write as our numerator would be 1 because I took out one piece of pie.” *Conduct check for understanding through thumbs up/thumbs down/thumbs in the middle method.*
  - “We can also use a fraction to represent the number of pieces left in the pie. We’ll use 4 as the denominator in our fraction again, can someone tell me why?” *Call on volunteers for answer.* “That’s right! The number of equal pieces that the pie started with was 4, so we keep that as our

denominator. Let's take a look at our numerator now. If our numerator represents the number or pieces we're analyzing, or looking at, and we're looking at the number of pieces left in the pie, what will our numerator be?" *Count with class to get to 3.* "3 is our numerator because that is how many pieces are left in the pie."

- Continue with a few more examples of fraction stories until a majority of the class is understanding the concept, then move on to happynumbers.com practice.
- Go to happynumbers.com on the smartboard.
  - Module 5 - Topic B - Lessons L, N, and O (in order)
  - Have students come up to the board to manipulate the interactive games in the lessons.
    - Have student explain what answer they would choose and why.
    - Prompt whole class discussion to decide if other students agree or disagree with student volunteer and why.

**b. Independent Practice:**

- Students will go to the following website:  
[http://www.sheppardsoftware.com/mathgames/earlymath/fractions\\_shoot.htm](http://www.sheppardsoftware.com/mathgames/earlymath/fractions_shoot.htm)
- Every student will begin at the "equal/unequal parts" level on the "relaxed, slow" time.
- Teacher will walk around classroom and monitor students' progress and understanding of the independent practice math game. Students will be instructed as to what level they should play on next by the teacher.
- After the second level of play, if they can demonstrate understanding to the teacher, they can choose any level/speed to play on.
- Students will be able to "free play" until the point at which entire class is able to at least demonstrate understanding through the lowest level of the game, and then class will move onto the closure/summative assessment activity.

**c. Check for Understanding:**

- Teacher will check for understanding informally throughout lesson through use of "thumbs up, down, in the middle" procedure.
- Teacher will walk around classroom and monitor students' progress and understanding of the independent practice math game.

3. **Closure:** See summative assessment.

**Differentiation:** Content, Process, or Product (include details for each group of students: struggling, advanced, and ELL students)

- **Advanced:** In independent practice student can select the highest level on the game and practice what they know in the "timed" part of the game to really test their knowledge.
- **Struggling:** Throughout the lesson students will be asked to explain their thought processes, providing reasoning for their answers. This should help struggling students

in some way as they will be hearing the explanations from the viewpoint of a peer. In addition, during independent practice the teacher will be walking around and checking in with individual students. For struggling students teacher can provide paper version of divided shapes, asking student questions such as “How many pieces is this shape divided into? Where do we put that number in our fraction and why? If I take \_\_\_ pieces out of the shape, what would my fraction look like for those pieces? What would the fraction look like for the pieces left in the shape?”

- **Problem Behavior:** Throughout the lesson, encourage positive behaviors by verbalizing praise for students demonstrating those behaviors. Encourage particular students exhibiting negative behaviors to participate more in the lesson by having them be the volunteer at the board or explain their reasoning for different problems. During independent practice make sure student is staying on task by keeping a close eye on them while monitoring progress of class.
- **ELL:** Students will be provided with constant visuals throughout the entirety of the lesson. Through the checks for understanding the teacher can ask what the student does not understand and will create a fraction problem for the student that is personalized to them (based on shapes and objects of their choosing).

**Assessment:** Formative or Summative

- **Summative:** This activity is similar to the creation of story problems in the model/ explicit instruction section and guided practice section.
  - In groups, students will pick a shape (circle, rectangle, square, or triangle).
  - Groups will then choose a number (1 through 6).
  - As a group, students will create a fraction story based on their chosen shape and number.
    - The shape will be an object found in real-life (i.e.- a pie for the circle, a chocolate bar for the rectangle, a brownie for the square, a slice of pizza for the triangle).
    - The number represents how many pieces the shape will be divided into.
    - Students should create a story that includes:
      - Why the object is being divided.
      - How many pieces the object will be divided into.
      - 2 different fractions that represent a number of pieces taken out of the object and the amount of pieces left in the object.
      - A drawing or physical representation of what the partitioned object looks like before and after pieces are removed.

**Rubric/Checklist:**

- Can students identify what the numerator and denominator of a fraction are? Yes No
- Can students divide a whole shape into a number of pieces determined by the denominator? Yes No
- Can students determine what the numerator of a fraction would be when analyzing the number of pieces taken away from a whole shape? Yes No

- Can students determine what the numerator of a fraction would be when analyzing the number of pieces left in a whole shape? Yes No
- Can students create fraction story problems that include:
  - A whole shape that will be divided. Yes No
  - How many pieces the shape will be divided into. Yes No
  - A fraction representing a number of pieces being taken away from/out of the shape. Yes No
  - A fraction representing the number of pieces left in the shape after taking some away. Yes No
  - A drawing or physical representation of the divided shape before and after pieces are removed. Yes No

**Materials/Resources/Technology**

Teacher

- Access to the websites listed in guided practice and independent practice, and a smartboard
- Chart paper or whiteboard, and markers
- Construction paper circles and scissors for students (model/explicit instruction)
- Pattern blocks or other manipulatives for students
- Construction paper, scissors, and pattern blocks for students (summative assessment)

Student

- Laptop or tablet with internet access (independent practice)
- Pencils or other writing utensils (summative assessment)

**Reflection (responses regarding strengths, areas needing improvement for next time, and ideas for follow-up)**

- Strengths:
  - We feel that the use of the online games went well. Happy Numbers is one of our favorite online teaching resources, and the other game, Fraction Splat, is a great tool that can be filtered to better fit the need of the student. In an actual classroom setting we would have all students involved in playing the online game and we would walk around the classroom to monitor the students, both engaging with them individually to gauge their level of understanding and to ensure that students are staying on track and are actually playing the Fraction Splat games.
- Needs Improvement:
  - The class was engaged in our lesson but the energy from the students was down. In the future it will be important to find ways to get the students more excited and awake. For our class in particular, and if there was more time, we could have done a GoNoodle or just had everyone stretch and move around before the lesson to wake everyone up.
- Follow-Up:

- In a follow-up lesson we would create a bell ringer with questions involving the vocabulary that we covered, as well as a fraction story that students would have to pull information from to create fractions that represent different sections of the story.

Video Links used for inspiration:

- <https://www.youtube.com/watch?v=dITV2ML0En0>
- <https://www.youtube.com/watch?v=SZaXtOHNh6s>
- <https://www.youtube.com/watch?v=4gR1iKbNIJw>