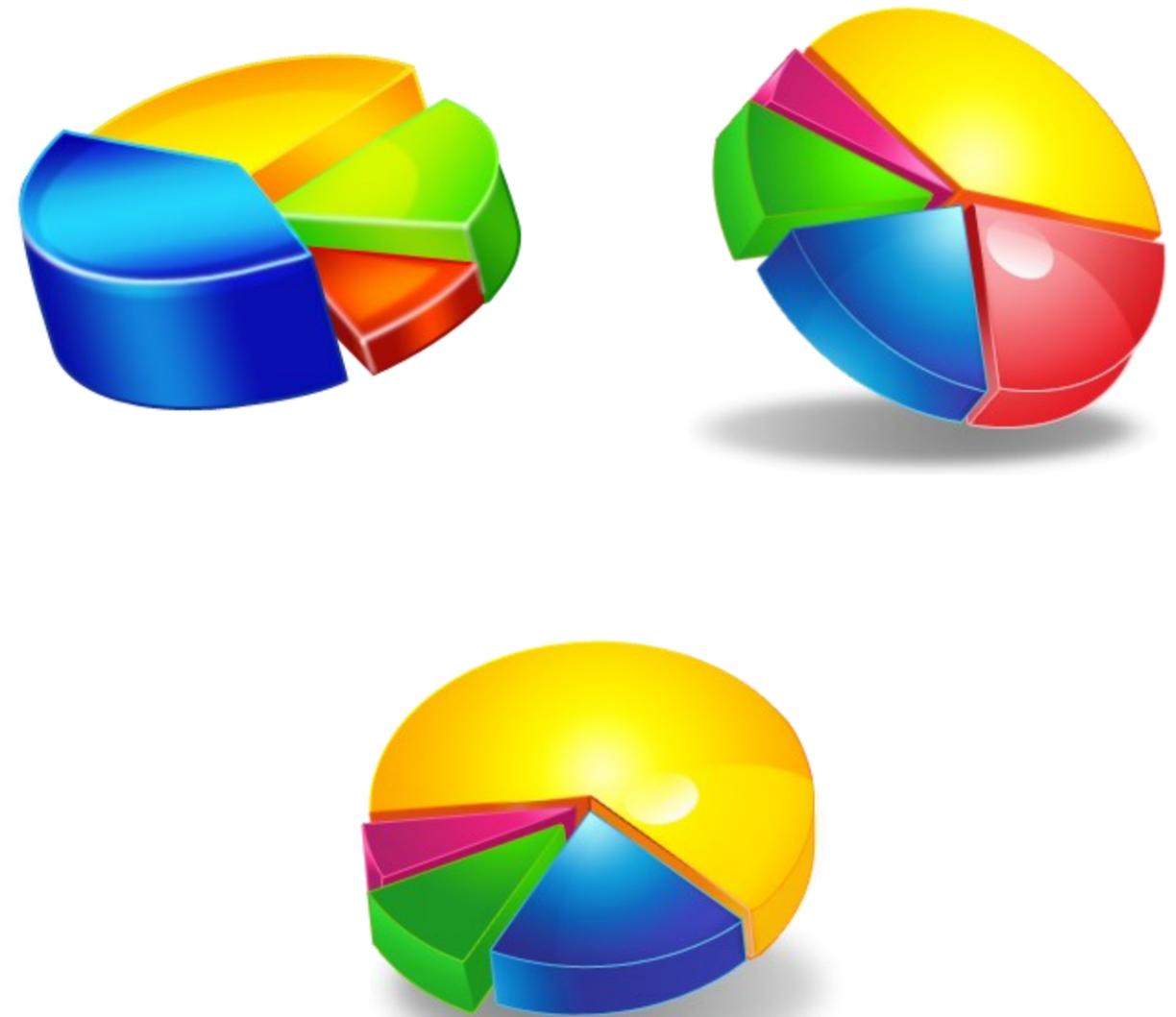


Notes/Reflections:

Visualizing Mathematics • Equivalent Fractions •



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Idea Contributed by Mary Gagliardi

In this lesson we will investigate equivalent fractions using our bodies and space.

**Essential Question: How can we visually demonstrate equivalent fractions of a whole?**

**Process**

**Warm-up**

- In a whole group activity, have students use their bodies to demonstrate the space indicated.
  - Wide ocean
  - River
  - Stream
  - Puddle
  - Tiny new tree
  - Forest of trees
  - Car
  - Motorcycle
  - Pebble
  - Boulder
  - Mountain
- Note that we can use our bodies to show different levels/spaces.

**Equivalent Fractions**

- Give the students a card with a fraction on it:  $\frac{1}{2}$ ,  $\frac{1}{4}$ ,  $\frac{1}{3}$ ,  $\frac{1}{8}$ .
  - The students must find the others that match their card. There should be enough of each fraction to make a whole.
  - Once they are all together they can sit.
    - Ask for observations. How could you tell when you found everyone? How did you know how many to find in your group?
- Now, using the square marked out on the floor, I need each of you to go fill that square, making sure that you all have the same amount of room. How can you make sure that you fill that space?
  - This is our whole.
  - Give each group a turn, but do not go in order. Side coach to make sure they fill the entire space, noting that members of different fraction groups will need to fill more space or less space. For example, some students may want to lay down, while others will need to stand up.
  - Once each group has had a turn, ask everyone to sit. Ask students to discuss what they noticed about each group, and about the amount of space each took up.
- Now, let's combine groups. Have the  $\frac{1}{4}$  and  $\frac{1}{2}$  groups do the same thing in the same square (each group is to ignore the other group).
  - Notice that 1 person takes up a space at the same time that 2 people take up that same space.
  - Now let's try this with the  $\frac{1}{2}$ 's and the  $\frac{1}{8}$ 's. Repeat.
  - Discuss the equivalent fractions.
  - Now let's try it with the  $\frac{1}{3}$ 's and the  $\frac{1}{2}$ 's.
  - Notice here that they are not the same, therefore demonstrating that they are not equivalent.

**Closing**

- Have each group make a set of equivalent fractions of their choice.

**Materials**

- Cards with fractions written on them ( $\frac{1}{2}$ ,  $\frac{1}{4}$ ,  $\frac{1}{3}$ ,  $\frac{1}{8}$ ), enough of each fraction to make a whole
- Tape to mark space on the floor

**Vocabulary**

**Equivalent Fraction**

Fractions which have the same value, even though they may look different.

**Classroom Tip**

This can be done in any classroom but space will need to be cleared. The correct use of space and partnership are important. Adjustments may have to be made if the students find the concept of "using the same space" awkward. You could have the students move to a new space and freeze to make their "whole."

**Assessment**

- Teachers should observe students, watching for involvement, engagement, and effort.
- Students should accurately identify their "whole."
- Students should accurately model and identify equivalent fractions.

**Common Core Georgia Performance Standards**

**MATHEMATICS**

**GRADE 4**

**MCC4.NF.1:** Explain why a fraction  $a/b$  is equivalent to a fraction  $(n \times a)/(n \times b)$  by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.

**MCC4.NF.2:** Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as  $\frac{1}{2}$ . Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols  $>$ ,  $=$ , or  $<$ , and justify the conclusions, e.g., by using a visual fraction model.

**MCC4.NF.3:** Understand a fraction  $a/b$  with  $a > 1$  as a sum of fractions  $\frac{1}{b}$ .

**Georgia Performance Standards**

**THEATRE ARTS**

**GRADE 4**

**TAES3.3:** Acting by developing, communicating, and sustaining roles within a variety of situations and environments

- b. Communicates thoughts, emotions, and actions of characters through movement
- c. Creates and portrays characters based on imagination
- d. Collaborates to create characters and to dramatize ideas
- e. Communicates relationships among characters
- g. Applies sensory elements in creating and portraying characters

**TAES3.7:** Integrating various art forms, other content areas, and life experiences to create theatre technology

- c. Develops dramatic pieces related to other content areas

**National Standards**

**THEATRE ARTS**

**Standard 2:** Acting by assuming roles and interacting in improvisations