EQUIVALENT FRACTIONS AND ORDERING OF FRACTIONS

3.20.2019

Subject

Mathematics

Prepared By

[Instructor Name]

Grade Level

3

Overview

This lesson plan covers teaching content for;

1. Understanding and equating equivalent fractions.
2. Simplify big fractions to smaller units using the idea of equivalent fractions.
3. Comparing like fractions using <, > and = signs.
4. Compare and order Unlike fractions through their LCM and equivalence.

Objectives

Students should be able to;

1. Understand and generate equivalent fractions.
2. Simplify big fractions to smaller units using the idea of equivalent fractions.
3. Compare and Order like fractions.
4. Compare and order Unlike fractions using LCM and equivalence.

Activity Starter/Instruction

1. Write the word "equivalent" on the board.
2. Ask students what word they see in "equivalent" that looks familiar? Once students see the similarities to "equal," explain that equivalent fractions are fractions that are equal to one another.
3. Draw a circle on the board and split it in half. Color one half of the circle. Ask students what fraction is being shown. Write "1/2" on the board.
4. Now, draw another line perpendicular to the first through the circle. Ask students what fraction is being shown now. Write "2/4" on the board.
5. Explain that although these are two different fractions, they are equivalent to one another. The amount shaded on the circle did not change, it was simply divided into more parts.

Teacher Guide

Day 1/ Lesson 1: 15 Mins

1. Return to the two fractions on the board: 1/2 and 2/4.
2. Explain that to determine if two fractions are equivalent, you must be able to multiply or divide the numerator and denominator by the same number.
3. Ask students what they can multiply both the numerator and denominator by in 1/2 to have it equal 2/4.
4. Show the students other fractions that are equivalent to 1/2 and 2/4, such as 3/6, 12/24, and 100/200. In each case, show students how the numerator and denominator are multiplied by the same number to create the equivalent fraction.
5. Show students another fraction: 8/24. Show students how the numerator and denominator could be divided by 8 to equal 1/3, or by 4 to equal 2/6.

Materials Required

- White Board
- Blank sheets
- Pencils

Additional Resources

- https://www.education.com/lesson-plan/evaluating-equivalent-fractions/
- https://www.scholastic.com/teachers/sponsored-content/unexpected-math/17-18/how-to-convert-fractions/
- https://www.turtlediary.com/lesson/comparing-and-ordering-fractions.html
- https://www.mathgoodies.com/lessons/fractions/ord

Additional Notes

Guided Practice

Day 2/ Lesson 2: 15 Mins

1. Explain that we can use equivalent fractions for ratios and proportions in predicting the likelihood of events.
2. For example, by analyzing past experience, an insurance company determines that 1 in every 20 drivers will have an accident in a given year. If they insure 10,000 drivers this year, the insurance company can plan ahead and put aside money to pay for 500 accidents (based on the proportion 1/20 = 500/10,000).
3. Have two students come up to the whiteboard at a time.
4. Give students a fraction. Students need to write an equivalent fraction as quickly as possible.
5. Whoever writes a correct equivalent fraction first stays at the board.
6. Continue by having students come to the board to come up with equivalent fractions.

Guided Practice

Day 3/ Lesson 3: 20 Mins

1. Explain that if the relationship between the two numerators and the two denominators is the same, they are equivalent.
2. Note that you could also work backwards and show the relationship with division as opposed to multiplication. Show students how both operations result in the same conclusion.
3. Display the following steps for determining if two fractions are equivalent on the board for students to reference during the Guided Practice portion of the lesson:
   - Write down the fractions from each of the pictures.
   - Determine the relationship between the numerators by either multiplying or dividing.
   - Determine the relationship between the denominators by either multiplying or dividing.
   - Answer this question: Is the relationship between the numerators and denominators the same?
4. Invite students to follow the steps to determine if 2/4 and 4/8 are equivalent.

Guided Practice

Day 5/ Lesson 5: 15 Mins

Ordering Fractions

1. The teacher explains that If the denominator is the same, look at the numerators, and put the fractions in order.

Guided Practice

Day 4/ Lesson 4: 15 Mins

Comparing and Ordering Fractions

1. When comparing two fractions with same denominator, the larger fraction is the one with the greater numerator.
2. For example: Imagine you take $\frac{1}{6}$ of a birthday cake and your sister takes $\frac{3}{6}$. Who has more cake?
3. We need to compare $\frac{1}{6}$ and $\frac{3}{6}$. The denominator of both fractions is same i.e. 6.
4. To compare fractions when the denominators of two fractions are the same, **the one with the greater numerator is larger.**
5. Since 3 is greater than 1, $\frac{1}{6} < \frac{3}{6}$. your sister has more cake than you.
6. In Comparing **Unlike Fractions**, i.e. fractions with different denominators, we must convert the fractions to equivalent fractions with a common denominator and then look for numerators.

   E.g. Compare $\frac{3}{6}$ and $\frac{2}{3}$.
7. Convert these fractions to equivalent fractions with a common denominator in order to compare them.
   Follow these steps:
   ▪ Find the lowest Common Multiple of the two denominators (3 and 6).
   ▪ The smallest multiple the two denominators have in common is 6.

2. If the denominator is different, we need to convert our fractions to equivalent fractions of the same denominator and then compare them to put in order.

3. For example: Order these fractions from least to greatest: $\frac{1}{10}$ $\frac{12}{10}$ $\frac{7}{10}$ $\frac{9}{10}$

Here the denominator of all the fractions is the same so we look at the numerators.

1 is the smallest number, followed by 7, 9, and 12.

$1 < 7 < 9 < 12$

Arrange the fractions from least to greatest:

$1/10 < 7/10 < 9/10 < 12/10$

- The least common denominator (LCD) of the fractions is the least common multiple of their denominators.
- Now, convert these fractions to equivalent fractions with a denominator 6. As we can notice the first fraction already has the denominator 6.
- So, convert the other fraction with denominator 6.

$$\frac{2*2}{3*2} = \frac{4}{6}.$$

Now, we have $\frac{3}{6}$ and $\frac{4}{6}$ with the same denominator.

Let's look for numerators to compare. We know, 4 is greater than 3. So, $\frac{3}{6} < \frac{4}{6}$

We can rewrite the answer as $\frac{1}{2} < \frac{2}{3}$

Assessment Activity

Assessment Activity

An 8-ounce cup of milk was served to each of three children. Lisa drank 7 ounces of milk. Her sister Angie drank 3 ounces, and her brother Mark drank 5 ounces. What part of the cup did each child drink? Who drank the smallest part of the cup? Who drank the largest part of the cup? Who fell in the middle?

Analysis: Write the part of the cup that each child drank as a fraction, and then order them from least to greatest.

Assessment Activity

Order these fractions from least to greatest:

$\frac{3}{4}$ $\frac{5}{6}$ $\frac{1}{2}$ $\frac{2}{3}$

These fractions have unlike fractions (different denominators).

We will use the least common denominator (LCD) to write these fractions as equivalents fractions with same denominators, and then compare.

The least common denominator of the fractions is 12.

Let the students use the LCM to write the corresponding equivalent fractions.

Summary

Review and Closing

1. Have some students share the equivalent fractions they came up with from their worksheet.
2. As students share, have the rest of the class determine how they know these fractions are equivalent. For example, 2/3=10/15. Both the numerator and denominator were multiplied by 5

Review and Closing

1. When comparing two fractions with same denominator, the larger fraction is the one with the greater numerator.
2. To compare fractions with different denominator, we must convert the fractions to equivalent fractions with a common denominator and then look for numerators.
3. If the denominator is the same, look at the numerators, and put the fractions in order.
4. If the denominator is different, we need to convert our fractions to equivalent fractions of the same denominator and then compare them to put in order.