

General Education Math Lesson Plan: Finding Equivalent Fractions

Source: <http://www.teachervision.fen.com/math-operations/lesson-plan/48950.html#ixzz1diHedzcS>

Finding Equivalent Fractions and Simplest Form

Grade Levels: 3 - 5

Objective

This lesson is for [third](#) through [fifth](#) grade students who have an understanding of equivalent fractions using models, an understanding of multiplication and division facts, and an understanding of multiplying and dividing fractions. Students will use multiplication and division to show equivalent fractions.

Key Understandings

If you multiply or divide both numerator and denominator by the same number, the new fraction will be equivalent to the original fraction.

Vocabulary

- **Denominator:** The bottom part of a fraction. The denominator represents the total number of equal parts in the whole or the set.
- **Numerator:** The top part of a fraction. The numerator represents how many pieces of the whole that are being discussed.
- **Equivalent Fractions:** Fractions that reduce to the same number and have an equal value. They are fractions that name the same amount in different ways.
- **Simplifying:** Reducing to lowest terms.
- **Lowest terms/Simplest Form:** The numerator and denominator of a fraction in lowest terms have no common factors except one.

Procedure

1. Demonstration

Review vocabulary and what students know about equivalent fractions. Show models of equivalent fractions and explain that even though the numerators and denominators in the fractions are different, the fractions represent the same amount, which means they are equivalent.

Use models to show the fractions $\frac{1}{2}$ and $\frac{2}{4}$, or draw them for students. Have students point out what they know about the fractions. Lead them to see that there

are twice as many pieces in the drawing of $\frac{2}{4}$ than in the drawing of $\frac{1}{2}$, but they represent the same amount.

Review that numbers that are multiplied by one equal the same number. Ask students to give a few examples of one as a fraction, for example: $\frac{3}{3}$, $\frac{4}{4}$, $\frac{2}{2}$. Write $\frac{1}{2} \times \frac{2}{2} = \frac{2}{4}$, and show that the numerator and denominator are doubled to show the new fraction. Explain that this is another way to find equivalent fractions.

Multiply the numerator and denominator by the same number to find an equivalent fraction. Or, divide the numerator and denominator by the same number. It's important to write fractions as "stacked", not side-by-side. This will help students when multiplying and dividing.

Show a few examples:

$$\frac{3}{12} \times \frac{4}{4} = \frac{12}{48}$$

$$\frac{3}{12} \div \frac{3}{3} = \frac{1}{4}$$

All of these fractions are equivalent because they name the same amount: $\frac{1}{4}$

After a few examples, have students think about a rule for this principle. They should be able to tell you that if you multiply or divide both numerator and denominator by the same number, the new fraction will be equivalent to the original fraction. The only time this won't work is if students multiply by zero.

Explain that sometimes fractions have to be renamed to make them easier to work with. Emphasize that the fractions will still equal the same amount, or be equivalent, but the numerator and denominator will be different from the original fraction.

To simplify fractions, find a common factor that will divide evenly into the numerator and denominator. For example, show the students this fraction: $\frac{12}{18}$.

Find the factors of the numerator and denominator. The factors of 12 are 2, 3, 4, and 6. The factors of 18 are 2, 3, 6, and 9. The common factors are 2, 3, and 6.

To simplify the fraction, divide by 6, since 6 is the greatest common factor. Show students how to divide the fraction: $\frac{12}{18} \div \frac{6}{6} = \frac{2}{3}$

Explain that a fraction is in simplest form if 1 is the only common factor of the numerator and denominator. Have students determine if this fraction is in simplest form.

$\frac{2}{3}$ is the simplest form of $\frac{12}{18}$.

In order to reduce a fraction to its lowest terms, explain that students can divide by any common factor, and continue until it's in lowest terms, or they can divide by the greatest common factor. For example, students could divide the fraction $\frac{12}{18}$ by

$\frac{2}{2}$, and then divide by $\frac{3}{3}$ to show the fraction in simplest form. Or students could divide $\frac{12}{18}$ by $\frac{6}{6}$ and show the fraction $\frac{2}{3}$ in one step.

Discuss the meaning of the word equivalent and what makes fractions equivalent. Have students write in their journals how they can find equivalent fractions. Have them answer the question: How do you know when you have a fraction in simplest form?

2. Guided Practice

Have students practice finding equivalent fractions both by multiplying the numerators and denominators and by dividing the numerators and denominators by the greatest common factors. Provide students with several fractions and ask them to find equivalent fractions by multiplying. Some examples could be $\frac{2}{3}$, $\frac{1}{4}$, or $\frac{3}{5}$.

Have students also simplify fractions. Some examples could be $\frac{6}{30} = \frac{1}{5}$, $\frac{4}{6} = \frac{2}{3}$, or $\frac{15}{20} = \frac{3}{4}$.

Another way to have students practice would be to create flash cards of equivalent fractions, and play a game such as concentration, where students find and match the equivalent fractions.

3. Sharing Ideas

Discuss what students learned while finding equivalent fractions. Have them share strategies they used.

4. Independent Practice

Give students several fractions and have them find equivalent fractions using both multiplication and division.

5. Assessment

Students can be assessed by reading their [journals entries](#) to check understanding, or by reviewing their independent practice of finding equivalent fractions

Read more on TeacherVision: <http://www.teachervision.fen.com/math-operations/lesson-plan/48950.html#ixzz1diHedzcS>

Activity: Create a universally designed version of the above lesson

UDL Planning	My ideas
Representation - adaptations in materials (e.g., adapt for sensory impairments)	
Expression - how will student show learning (e.g., use of assistive technology; alternative project)	
Engagement - how will student participate in the activity	