

Lesson 4: Equality of Fractions

Purpose: To introduce a rule for obtaining equal fractions

Materials: Fraction Bars, Master #3 "Rule for Equal Fractions," pencils and paper

TEACHER MODELING/STUDENT COMMUNICATION

Activity 1 Equality of fractions by comparing shaded amounts

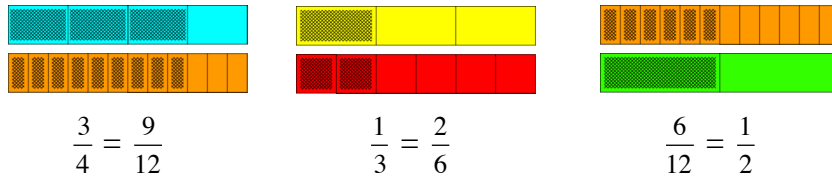
1. Pass out decks of bars for each group. Pencils and paper will be needed.

Fraction Bars

- Find a pair of bars that have the same shaded amount and write the equality statement for their fractions.

paper and pencils

Show a few examples of pairs of student bars and write the corresponding equations.



Master #3

2. Pass out Master #3 "Rule for Equal Fractions" to each student and ask them to complete #1 and #2 on these sheets. Introduce the words **numerator**, top number of a fraction, and **denominator**, bottom number, as they are needed for this sheet.

paper and pencils

3. Once students have completed #2, discuss the relationship they discovered in #1 and the method they used in #2. Illustrate one or more of the equations in #2 with bars so that students can see the equal shaded amounts for the equality statements and that multiplying the numerator and denominator by 2 produces an equal fraction.



4. Ask students to complete #3 and #4 on their sheets. Discuss.

- What have you learned so far from the equations on your sheets? (The numerator and denominator of a fraction can be multiplied by 2 or 3 to get an equal fraction.)

5. Ask students to answer #5 and #6. Then illustrate examples with bars to show that the numerator and denominator can be multiplied by 4 to obtain equal fractions.



6. Read #7 from their sheets and once students agree that they will get an equal fraction by multiplying the numerator and denominator by 2, 3, or 4, ask:

- Do you think you will get an equal fraction if the numerator and denominator of a fraction are multiplied by 5 or 6 or larger numbers? (Yes) Complete #8 on your sheets.

7. Write some of the preceding equalities with the larger denominators first.

$$\frac{4}{8} = \frac{1}{2} \quad \frac{2}{10} = \frac{1}{5} \quad \frac{2}{6} = \frac{1}{3} \quad \frac{9}{12} = \frac{3}{4} \quad \frac{6}{12} = \frac{1}{2} \quad \frac{6}{8} = \frac{3}{4}$$

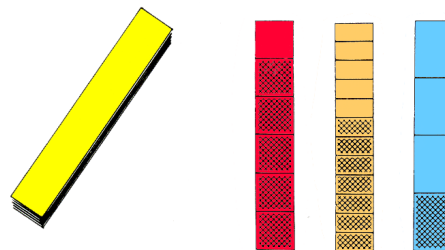
- Look for a pattern. What can be done to the first fraction to obtain the second? (Divide the numerator and denominator by the same number.)

8. Tell students that dividing the numerator and denominator by the same number (greater than 1) is called **simplifying the fraction** because you are using smaller numbers. If the numerator and denominator cannot be divided further, such as $\frac{2}{5}$, the fraction is in **simplified form** or **lowest terms**.

Game: Match (small groups)

Fraction Bars

Illustrate a few turns of the game with bars at a centrally located desk or table. Place 3 bars face up and the others in a stack face down, and as you explain the game illustrate it by turning over bars from the stack.



- Each player in turn takes the top bar from the stack and compares it to the bars facing up. If the bar has the same shaded amount as one of the bars facing up, the player wins both bars and continues the turn by taking another bar from the stack. Or, if a bar for a one-of-a-kind fraction is turned up, $\frac{1}{12}$, $\frac{5}{12}$, $\frac{7}{12}$, or $\frac{11}{12}$, the player wins the bar.
- When a bar from the stack does not have the same shaded amount as one of the bars facing up, it is placed face-up with the others, and the player's turn ends. After the stack has been played through, the player with the most bars wins.

Fraction Playing Cards

Option: Play **Match** with the Fraction Playing Cards rather than the bars. Some students may want to keep a deck of bars face up to check equalities of fractions.

INDEPENDENT PRACTICE and ASSESSMENT

Activity Sheet #4A and Activity Sheet #4B



fractionbars.com Set 1 **Lowest Terms Game** (winning bars by typing fractions in lowest terms)