MATH ACTIVITY **5.2**

Equality and Inequality with Fraction Bars
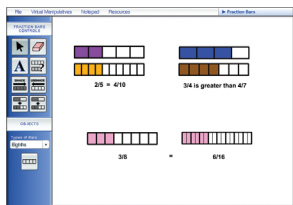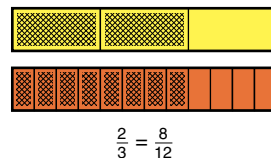
Materials: Fraction Bars in the Manipulative Kit or Virtual Manipulatives.

1. The fractions for these bars are equal because both bars have the same shaded amount. In the deck of 32 Fraction Bars there are 3 bars whose fractions equal $\frac{2}{3}$. Sort your deck of bars into piles so bars with the same shaded amounts are in the same pile.

$$\frac{2}{3} = \frac{8}{12}$$

a. Find all the fractions from the bars that equal the following fractions, and write equalities: $\frac{1}{2}$, $\frac{4}{6}$, $\frac{1}{4}$, $\frac{9}{12}$, and $\frac{1}{3}$.

b. If a bar is all shaded, it is called a **whole bar** and its fraction is equal to 1. If a bar has no parts shaded, it is called a **zero bar** and its fraction is equal to 0. List all the fractions for the whole bars and zero bars.

2. A fraction is **not in lowest terms** if the numerator and denominator have a common factor greater than 1. List all the fractions from the deck other than those equal to 0 or 1 that are not in lowest terms. Then write each fraction in lowest terms.

*3. A $\frac{3}{4}$ bar has more shading than a $\frac{2}{3}$ bar, so $\frac{3}{4} > \frac{2}{3}$. For each of the following pairs of fractions, find a fraction from the deck that is greater than the smaller fraction and less than the larger fraction.

a. $\frac{1}{2}$, $\frac{2}{3}$ **b.** $\frac{1}{6}$, $\frac{1}{3}$ **c.** $\frac{3}{4}$, $\frac{11}{12}$ **d.** $\frac{2}{3}$, $\frac{5}{6}$
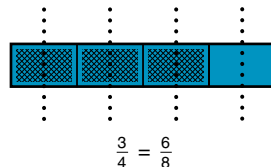
4. Each part of this $\frac{3}{4}$ bar has been split into 2 equal parts. There are now 8 equal parts, and 6 of these are shaded. This illustrates the equality $\frac{3}{4} = \frac{6}{8}$.

$$\frac{3}{4} = \frac{6}{8}$$

a. Find bars from the deck for each of the following fractions: $\frac{1}{4}$, $\frac{2}{3}$, $\frac{11}{12}$, $\frac{1}{2}$, $\frac{5}{6}$. Split each part of the bar into two equal parts to illustrate another fraction, and write equalities for these pairs of fractions.

b. Use the bars in part a and split each part of each bar into three equal parts to illustrate another fraction. Write equalities for these pairs.

$\frac{1}{3}$

$\frac{5}{6}$

$\frac{4}{12}$
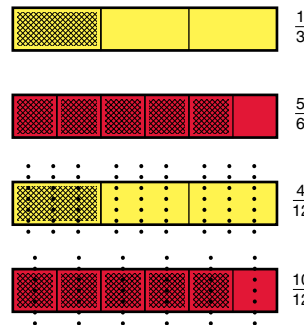
5. The top two bars shown here have different-size parts. Sometimes it is necessary to further subdivide the parts of a bar so that both bars have parts of the same size. If each part of the $\frac{1}{3}$ bar is divided into 4 equal parts and each part of the $\frac{5}{6}$ bar is divided into 2 equal parts, both bars will have 12 equal parts. Divide the parts of the following pairs of bars so that both bars have parts of the same size. What fraction concept is being modeled by this activity?

$\frac{10}{12}$