

## **Activity Cards**

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Level G

#### Objective

Students can understand mixed numbers and improper fractions.

#### Materials

#### **Additional Materials**

- fraction bars
- Vocabulary Card 26, *improper fraction*
- Vocabulary Card 33, mixed number

#### Alternative Groupings

Whole Class: Draw fraction bars on the board to model an improper fraction. Have the entire class write the improper fraction and mixed number that the model represents.

Small Group: Have students complete the activity in groups of three. Taking turns, one student makes the model, one student writes the improper fraction, and one student writes the mixed number.

#### **Prepare Ahead**

Combine two fraction bar groups into one superset.

## **An Improper Mix**

#### Introduce the Activity

- Pair students and give each pair a superset of fraction bars.
- Today we are going to use fraction bars to explore improper fractions and mixed numbers.

#### **Begin** the Activity

- Write  $\frac{3}{2}$  on the board.
- Why is this an improper fraction? The numerator is greater than the denominator.
- Have students lay three  $\frac{1}{2}$ -bars in a row end to end to model  $\frac{3}{2}$ .
- Tell students to place a 1-bar below their models. Make sure the two rows of bars are aligned on the left.
- ► Is  $\frac{3}{2}$  greater than 1? How do you know? Possible answer: Yes; the model for  $\frac{3}{2}$  is longer than the model for 1.
- How many  $\frac{1}{2}$ -bars equal 1 whole bar? 2
- Have students replace each pair of  $\frac{1}{2}$ -bars in their models with a 1-bar.
- ► How many whole bars did you use? 1
- How many  $\frac{1}{2}$ -bars are left? 1
- Explain that the bars now model  $1\frac{1}{2}$ . Write  $1\frac{1}{2}$  on the board.
- ► Why is 1<sup>1</sup>/<sub>2</sub> a mixed number? It is a whole number and a fraction less than one.
- ► Is 1<sup>1</sup>/<sub>2</sub> greater than 1? How do you know? Possible answers: Yes; the model for 1<sup>1</sup>/<sub>2</sub> is longer than the model for 1; 3 is greater than 1.
- Have pairs take turns modeling and writing improper fractions and mixed numbers. One student should use unit fraction bars to model a value greater than one. The other student should write the improper fraction and mixed number for the model.
- Tell students to draw a picture to show each model and write the improper fraction and mixed number it represents below the model.
- Pairs should model and write at least five examples.

#### **Conclude** the Activity

Invite volunteers to draw one of the models they made on the board. The rest of the class should write the improper fraction and mixed number the model represents.

#### **Questions to Ask**

- ▶ Why is this a mixed number?
- ► Why is this an improper fraction?
- Which unit fraction bar should you use to model this improper fraction/mixed number?

# (**4F**)

#### Objective

Students can convert between improper fractions and mixed numbers.

#### **Materials**

#### **Additional Materials**

- fraction bars
- index cards
- Vocabulary Card 26, *improper fraction*
- Vocabulary Card 33, mixed number

#### Alternative Grouping

**Pair:** Taking turns, one student models an improper fraction, and the other student uses the model to convert the improper fraction to a mixed number. The next turn, one student models a mixed number, and the other student converts it to an improper fraction.

#### Prepare Ahead

Combine two fraction bar groups into one superset.

## **Change and Match**

#### Introduce the Activity

- Organize students into small groups. Give each group a superset of fraction bars and ten index cards.
- Remind students that in the previous activity, they used fraction bars to model improper fractions and mixed numbers.
- Today you will use fraction bars to change an improper fraction to a mixed number and a mixed number to an improper fraction.

#### **Begin** the Activity

- On the board, write  $\frac{3}{2} =$  \_\_\_\_\_.
- Have students use three  $\frac{1}{2}$ -bars to model the fraction.
- Tell students to lay as many 1-bars below their models as they can without extending past the  $\frac{3}{2}$  model. Have students finish the length with  $\frac{1}{2}$ -bars. (Make sure both models align left.)
- How many whole bars did you use? How many <sup>1</sup>/<sub>2</sub>-bars? 1; 1
- This shows that  $\frac{3}{2}$  equals  $1\frac{1}{2}$ .
- Write  $\frac{3}{2} = 1\frac{1}{2}$  on the board.
- Now write  $1\frac{3}{4} =$ \_\_\_\_\_ on the board.
- Have students use 1-bars and  $\frac{1}{4}$ -bars to model the mixed number.
- Tell students to lay  $\frac{1}{4}$ -bars end-to-end below their  $1\frac{3}{4}$  model to match lengths.
- How many  $\frac{1}{4}$ -bars did you use? 7
- This shows that  $1\frac{3}{4}$  equals  $\frac{7}{4}$ .
- Write  $1\frac{3}{4} = \frac{7}{4}$  on the board.
- Have groups work together to use their fraction bars to write four pairs of equivalent improper fractions and mixed numbers. Tell students to write each number on an index card.

#### **Conclude** the Activity

- Collect all the cards, shuffle them, and distribute them to students.
- Tell students to find the student who has their matching card—the improper fraction that equals their mixed number or the mixed number that equals their improper fraction.
- Verify that all the matches are correct.
- Encourage students to share the methods they used to find their matches.

#### **Questions to Ask**

- How can you use models to change an improper fraction to a mixed number?
- ► How can you use models to change a mixed number to an improper fraction?

# (**4G**)

#### Objective

Students can find common denominators of fractions and add fractions.

#### **Materials**

**Program Materials** 

Trade and Join Fraction Cards, 1 set per pair

#### **Additional Materials**

- fraction tiles, 1 set per pair
- Vocabulary Card 20, equivalent fractions

#### Alternative Grouping

**Individual:** Deal each student two cards. Each student can share the final solution with the class.

#### Prepare Ahead

Copy and cut apart Trade and Join Fraction Cards.

### **Trade and Join**

#### Introduce the Activity

There is an old saying that you can't add apples to oranges. When you add things together, they must be things that are alike. For adding fractions, that means the denominators, or the number of parts in the whole, must be the same number of parts for both fractions before they can be added. In this activity, we are going to change the denominators of fractions before we add them so the denominators are the same. This way we end up adding apples to apples.

#### **Begin** the Activity

Groups students into pairs and distribute fraction tiles to each pair. Shuffle and deal one Trade and Join Fraction Card to each student.

- Working in pairs, students are going to find equivalent fractions for each of their cards so they are able to add the fractions. Demonstrate by using the fractions  $\frac{2}{3}$  and  $\frac{1}{2}$ . Have students demonstrate as you go through the steps.
- ► To add fractions, we first need to find equivalent fractions so both fractions have a common denominator.
- Write  $\frac{2}{3} + \frac{1}{2}$  vertically on the board.
- One way to find equivalent fractions with a common denominator is by using the denominators of both fractions.
- Next to  $\frac{2}{3}$  write " $\times \frac{2}{2} =$  \_\_\_\_\_\_." Next to  $\frac{1}{2}$  write " $\times \frac{3}{3} =$  \_\_\_\_\_\_." Remind students that any number multiplied by 1 has the same value and both  $\frac{2}{2}$  and  $\frac{3}{3}$  are equal to 1.
- Find the equivalent fractions.  $\frac{4}{6}$ ;  $\frac{3}{6}$
- ► Now that we have equivalent fractions with common denominators, we can add the numerators.
- What is  $\frac{4}{6} + \frac{3}{6}?\frac{7}{6}$
- Have students convert  $\frac{7}{6}$  to a mixed number.  $1\frac{1}{6}$
- Have students find equivalent fractions with common denominators to add their fractions. Then, have students exchange their Trade and Join Fraction Cards with another group. Have pairs of students add their new cards together using equivalent fractions with common denominators.
- Allow each pair to complete this task three or four times. Have students keep their last solution together to share with the group.

#### **Conclude** the Activity

Have each pair share its last solution with the group. Have students explain how they found a common denominator. If time allows, have students find common denominators by finding the least common multiple of their final pairs of fractions.

#### **Questions to Ask**

- ► How can you find equivalent fractions?
- Do you always need a common denominator to add fractions?

## PCTIVITY 4H

#### Objective

Students can find common denominators of fractions and subtract fractions.

#### **Materials**

Program Materials

Trade and Join Fraction Cards

#### **Additional Materials**

- fraction tiles, 1 set per pair
- Vocabulary Card 20, equivalent fractions

#### **Alternative Grouping**

Individual: Deal each student two cards. Students can share problems with a partner, small group, or the class.

#### Prepare Ahead

Copy and cut apart Trade and Join Fraction Cards.

### **Trade and Remove**

#### Introduce the Activity

You can only take away apples from apples and oranges from oranges. The denominators of two fractions must be the same before you subtract the amount in the numerators.

#### **Begin** the Activity

- Distribute a set of fraction tiles to each pair of students. Guide them to work together to sort and arrange the pieces by fractional amounts.
- Create a deck of the Trade and Join Fraction Cards. Deal one card to each player.
- Working in pairs, have students create equivalent fractions with common denominators. Remind students they can use their fraction tiles to help create equivalent fractions with common denominators.
- Once they have equivalent fractions with common denominators, determine the difference between the two fractions.
- Partners share this first solution with another pair of students. Each pair checks the other pair's work.
- Tiles are returned to the original deck and reused for additional subtracting tasks. Each pair of students needs to find the difference of four pairs of cards. Have students keep their last solution together to share with the group.

#### **Conclude the Activity**

Each pair shares their last solution with the class. Have the class discuss different strategies they used to complete the problems.

#### **Questions to Ask**

- What is one way to find a common denominator?
- Why do we find common denominators?