Lesson 4: Going Further With Comparing Fractions

Getting Started

Big Ideas

- How can we compare fractions?

Facts and Definitions

- If you want to compare two fractions with different denominators, you can find a multiple that both denominators share, create equivalent fractions using the shared denominators, and then compare those fractions.

Skills

- Compare two fractions with different numerators and different denominators

Materials

- ✓ index cards (kit)
- ✓ Interactive Notebook (kit)
- ✓ laminated fraction chart (kit)

Introduction

Using the index cards from the previous lesson's conclusion, tell your child to place them in a stack facedown. She will then turn one card over at a time and then name a fraction that is less than the one showing or a fraction that is greater than the one showing. For example, if she draws 3/4, she might say that 1/4 is less than 3/4. If she draws 1/2, she might say that 4/5 is greater than 1/2. Ask her to repeat this process four times, and allow her to use the laminated fraction chart as needed. (You can also use this chart to check her answers.)

Next, remind your child that she knows how to make equivalent fractions. Write 1/3 on the whiteboard, and ask her to write 2 fractions that are equivalent to it (for example, 2/6 and 3/9).

Now, provide time for your child to read the information in "The Same Denominator Method" section at the following web link. Scroll down to find this section. Explain to your child that he is going to be using this method to compare fractions during this lesson.

Comparing Fractions

www.movingbeyondthepage.com/link/7858/

Scroll down the page and read the section called "The Same Denominator Method." Stop reading when you reach the "Making the Denominators the Same" section.

Activities

Activity 1: Changing Denominators to Compare Fractions

Give your child the "Changing Denominators to Compare Fractions" sheets. She should read the information and complete the tasks as instructed on the sheets. If needed, you can work through the steps with her.

Answer Key:

- Page 1: Now Jess is comparing 10/15 and 9/15. Which is greater? (10/15) So, 2/3 > 3/5
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- Page 2: 1/4 and 2/3 — chosen denominator (12), 1/4 < 2/3
  4/5 and 2/3 — chosen denominator (15), 4/5 > 2/3
- Think About It! Danny ate 2/6 of a box of donuts. Mickie ate 3/4 of a box of donuts. The boxes of donuts had the same number of donuts when they started. Who ate more donuts? Use Jess’s steps to find the answer. (Mickie)

Activity 2: Comparing More Fractions

Provide time for your child to read over the "Methods for Comparing Fractions" sheet. She can use this sheet as she compares fractions during this lesson, and then she should store it in her Interactive Notebook for future reference.

Once your child has read the "Methods for Comparing Fractions" sheet, she will complete the "Comparing Fractions Practice" sheet. Allow her to use the "Methods for Comparing Fractions" sheet and the laminated fraction chart as needed as she works, but encourage her to work as independently as possible.

Answer Key:
- 5/6 > 3/4
- 1/5 > 1/7
- 5/12 < 2/3
- 7/16 > 3/8
- 2/3 = 6/9
- 7/12 < 9/12
- 3/5 < 5/6
- 1/2 < 10/16
- 10/20 = 20/40
- 6/8 > 4/8
- 1/6 < 1/4
- 1/4 < 3/8
- Think About It! Circle the fraction that is the greatest. (7/10)

Activity 3: Fractions in Recipes

Remind your child that we can see fractions in the world all around us. Ask her to name some ways that we use fractions in our daily lives. She might talk about telling time (for example, quarter and half hours), money (such as quarters and half dollars), measurement (like half inches and quarter miles), and cooking (like half and quarter cups). Give her the "Fractions in Recipes" page and explain that in this activity she will be comparing fractions in given recipes.

- French Toast:
  Does the recipe require more cinnamon or nutmeg? (cinnamon)
  Does it require more milk or maple syrup? (maple syrup)
  Does it require more sugar or butter? (butter)
- Berry Party Punch:
  Does the recipe require more strawberries or blueberries? (blueberries)
  Does it require more pineapple juice or orange juice? (orange juice)
  Does it require more water or sugar? (sugar)
- Vanilla Cupcakes:
  Does the recipe require more vanilla extract or baking powder? (vanilla extract)
  Does it require more sugar or sour cream? (sour cream)
  Does it require more butter or sugar? (butter)
Activity 4: Basic Skills Review
Your child will complete the “Basic Skills Review #14” sheet. Give her scratch paper to use as needed. While she works, write the following fractions on separate index cards: 3/10, 11/30, 1/2, 12/15, and 5/6.

Answer Key:

1. 730×100=73,000
2. 600×800=480,000
3. What is the remainder when you divide 80 by 9? (8)
4. 53×19=b. What is b? (1007)
5. Miguel has 23 times as many stamps as Dana. Dana has 42 stamps. How many stamps does Miguel have? (966)
6. 5628×7=A. What is A? (39,396)
7. 7000×N=350,000. What is N? (50)
8. Which is greater, 5/6 or 3/4? (5/6)

Wrapping Up
Give your child the index cards that you wrote during the previous activity (be sure to mix them up), and ask her to put them in order from least to greatest. Allow her to use the “Methods for Comparing Fractions” sheet as a reference as she works. She should place them in the following order: 3/10, 11/30, 1/2, 12/15, and 5/6. Once she puts them in the correct order, ask her to explain her thinking.

As she works, check your child’s work for this lesson, and be ready to address any mistakes.
Changing Denominators to Compare Fractions

Jess needs to find out which is larger, \( \frac{2}{3} \) or \( \frac{3}{5} \). She knows that she can't use a number line to do this because these fractions have different denominators. She also knows that it's easier to compare fractions when they have the same denominators. She decides to change each of the fractions so that they have the same denominator. She can do this by using what she knows about equivalent fractions.

Jess begins by thinking about what she knows about multiples of 3 and 5. She needs to find a number that is a multiple of both of them. So, she writes down the following multiples of 3 and crosses through the ones that aren't also multiples of 5:

\[
\begin{align*}
3 & \times 6 \times 9 \times 12 \times 15 \times 18
\end{align*}
\]

15 will work! Now, she needs to make 15 the denominator for both \( \frac{2}{3} \) and \( \frac{3}{5} \).

Jess finds that \( \frac{2}{3} \) is equivalent to \( \frac{10}{15} \) when she multiplies both the numerator and the denominator by 5.

\[
\begin{align*}
\frac{2}{3} & = \frac{10}{15} \\
\times 5 & \times 5
\end{align*}
\]

She then finds that \( \frac{3}{5} \) is equivalent to \( \frac{9}{15} \) when she multiplies both the numerator and the denominator by 3.

\[
\begin{align*}
\frac{3}{5} & = \frac{9}{15} \\
\times 3 & \times 3
\end{align*}
\]

Fill in the blanks:

Now Jess is comparing \( \frac{10}{15} \) and \( \frac{9}{15} \). Which is greater? ________________

So, \( \frac{2}{3} \bigcirc \frac{3}{5} \)
**Instructions:** Use Jess’s steps to compare the following pairs of fractions. Show your work on this sheet. Name your chosen denominator. Write $>$ or $<$ to compare the fractions.

**Jess’s Steps:**

1) Find a denominator that will work for both fractions by listing multiples of the smaller of the denominators.
2) Create an equivalent fraction for each given fraction that has your chosen denominator from Step 1.
3) Now that both fractions have the same denominator, which one is greater?
4) Use the new fractions to identify which of the fractions that you started with is greater.

**Think About It!** Danny ate $\frac{2}{5}$ of a box of donuts. Mickie ate $\frac{3}{4}$ of a box of donuts. The boxes of donuts had the same number of donuts when they started. Who ate more donuts? Use Jess’s steps to find the answer.
Methods for Comparing Fractions

Comparing Fractions With a Numerator of 1

\[ \frac{1}{2} > \frac{1}{3} \quad \text{and} \quad \frac{1}{12} < \frac{1}{6} \]

If both fractions have a numerator of 1, the fraction with the larger denominator is less. The fraction with the smaller denominator is greater.

Comparing Fractions With the Same Denominator

\[ \frac{4}{7} < \frac{6}{7} \quad \text{and} \quad \frac{8}{10} > \frac{4}{10} \]

If both fractions have the same denominator, the fraction with the larger numerator is greater.

Comparing Fractions by Using One-Half

\[ \frac{3}{4} > \frac{1}{2} \quad \text{and} \quad \frac{1}{2} > \frac{1}{5} \]

therefore, \[ \frac{3}{4} > \frac{1}{5} \]

First figure out how each fraction compares to \( \frac{1}{2} \).

Comparing Fractions by Changing Denominators

If the denominators are different, find a multiple that both denominators share, create equivalent fractions using the shared denominator, and then compare those fractions.

For \( \frac{3}{4} \circ \frac{4}{5} \),

\[ \frac{3}{4} = \frac{15}{20} \quad \text{and} \quad \frac{4}{5} = \frac{16}{20} \]

therefore, \( \frac{3}{4} < \frac{4}{5} \)
Comparing Fractions Practice

**Instructions:** Write >, <, or = in the blanks. Use the methods of your choosing.

\[
\begin{array}{ccc}
\frac{5}{6} & \bigcirc & \frac{3}{4} \\
\frac{1}{5} & \bigcirc & \frac{1}{7} \\
\frac{5}{12} & \bigcirc & \frac{2}{3} \\
\frac{7}{16} & \bigcirc & \frac{3}{8} \\
\frac{2}{3} & \bigcirc & \frac{6}{9} \\
\frac{7}{12} & \bigcirc & \frac{9}{12} \\
\frac{3}{5} & \bigcirc & \frac{5}{6} \\
\frac{1}{2} & \bigcirc & \frac{10}{16} \\
\frac{10}{20} & \bigcirc & \frac{20}{40} \\
\frac{6}{8} & \bigcirc & \frac{4}{8} \\
\frac{1}{6} & \bigcirc & \frac{1}{4} \\
\frac{1}{4} & \bigcirc & \frac{3}{8} \\
\end{array}
\]

**Think About It!** Circle the fraction that is the greatest.

\[
\begin{array}{ccc}
\frac{7}{10} & \bigcirc & \frac{8}{15} \\
\frac{20}{30} & \bigcirc &
\end{array}
\]
**Fractions in Recipes**

**French Toast**

**Recipe**

- $\frac{1}{2}$ teaspoon cinnamon
- $\frac{1}{4}$ teaspoon ground nutmeg
- $2 \frac{1}{3}$ tablespoons sugar
- $2 \frac{2}{3}$ tablespoons butter

- 3 eggs
- $\frac{1}{2}$ cup milk
- $\frac{1}{2}$ teaspoon vanilla extract
- 8 slices bread
- $\frac{1}{3}$ cup maple syrup

**Directions:** Look at the following recipes and answer the questions.

- Does the recipe require more cinnamon or nutmeg?
- Does it require more milk or maple syrup?
- Does it require more sugar or butter?

**Berry Party Punch**

**Recipe**

- $\frac{1}{2}$ cup sliced strawberries
- $\frac{3}{4}$ cup blueberries
- $\frac{1}{2}$ cup water
- $\frac{3}{8}$ cup sugar

- 2 tablespoons lemon juice
- $\frac{1}{4}$ cup pineapple juice
- $\frac{3}{8}$ cup orange juice
- $8 \frac{1}{2}$ cups ginger ale

- Does the recipe require more strawberries or blueberries?
- Does it require more pineapple juice or orange juice?
- Does it require more water or sugar?

**Vanilla Cupcakes**

**Recipe**

- 1 $\frac{1}{2}$ cups flour
- $\frac{1}{4}$ teaspoon baking powder
- $\frac{1}{2}$ teaspoon salt
- $\frac{1}{2}$ cup unsalted butter, softened

- $\frac{3}{8}$ cup sugar
- 2 large eggs
- $1 \frac{3}{4}$ teaspoons vanilla extract
- $\frac{1}{2}$ cup sour cream

- Does the recipe require more vanilla extract or baking powder?
- Does it require more sugar or sour cream?
- Does it require more butter or sugar?
1. \[ 730 \times 100 = \underline{_______} \]

2. \[ 600 \times 800 = \underline{_______} \]

3. What is the remainder when you divide 80 by 9?

4. What is \( b \)?
   
   \[ 53 \times 19 = b \]

5. Miguel has 23 times as many stamps as Dana. Dana has 42 stamps. How many stamps does Miguel have?

6. What is \( A \)?
   
   \[ 5628 \times 7 = A \]

7. What is \( N \)?

   \[ 7000 \times N = 350,000 \]

8. Which is greater?

   \[ \frac{5}{6} \text{ or } \frac{3}{4} \]