LESSON 7

Objective

Compare fractions with the same numerator or denominator.

Common Core State Standards

- **3.NF.3d** Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.

Number and Operations–Fractions

Comparing Fractions

In previous lessons, students learned that the size of a fractional part is viewed relative to the size of the whole. Students can now compare fractions that have either the same numerator or same denominator to determine their relative sizes. In this lesson, students create fractional parts with manipulatives and compare them using <, =, or > symbols.

Try It! *Perform the Try It! activity on the next page.*

Talk About It

Discuss the Try It! activity.

- **Ask:** *What if Trey had decided he would cut his orange into fourths and eat 3 pieces? Then who would eat more?* Have students show a Deluxe Rainbow Fraction® Circle that is divided into fourths and identify 3 fourths.
- **Say:** *Trey will eat $\frac{3}{4}$ and Alauna will eat $\frac{3}{8}$.* Write $\frac{3}{4}$ and $\frac{3}{8}$ on the board. **Ask:** *How can we compare these, when the numerators are the same, but the denominators are different?* Guide students to compare the size of the parts by placing one group on another to see which is greater.
- **Say:** *When something is broken into more parts, each part will be smaller.* **Ask:** *If one pie is cut into 6 pieces and another pie is cut into 8 pieces, which pie will have bigger pieces?*

Solve It

With students, reread the problem. Have students draw and write $\frac{3}{8}$ and $\frac{5}{8}$. Then have students write < or > to show which is greater.

More Ideas

For other ways to teach about comparing fractions—

- Have pairs use Fraction Tower® Cubes to model various fractions with the same numerators or denominators and determine whether they are greater than, less than, or equal to one another. Encourage students to discuss and justify their comparisons.
- Have students use Cuisenaire® Rods to model the following fractions: $\frac{2}{5}$ and $\frac{4}{5}$; $\frac{1}{2}$ and $\frac{1}{4}$; $\frac{4}{6}$ and $\frac{2}{3}$. Have students write the fractions, compare the models, and use <, >, or = to compare the fractions.

Formative Assessment

Have students try the following problem.

Which is true?

A. $\frac{1}{6} > \frac{1}{10}$ **B.** $\frac{2}{9} > \frac{2}{3}$ **C.** $\frac{4}{8} > \frac{7}{8}$ **D.** $\frac{1}{4} > \frac{3}{4}$

Try It!

20 minutes | Groups of 4

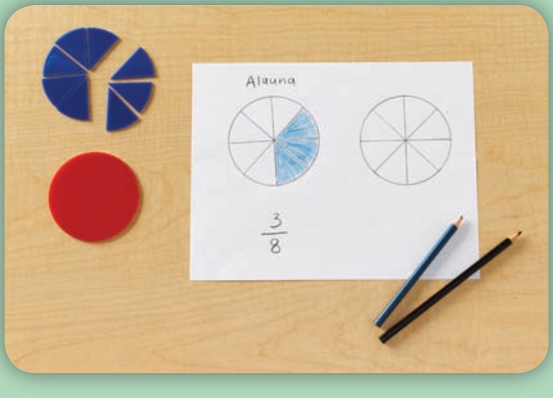
Here is a problem about comparing fractions.

Alauna and Trey each cut their orange into 8 equal parts. Alauna says she will eat $\frac{3}{8}$ of her orange. Trey says he will eat $\frac{5}{8}$ of his orange. Who will eat more of their orange?

Introduce the problem. Then have students do the activity to solve the problem. Distribute Deluxe Rainbow Fraction Circles, paper, and pencils to students.

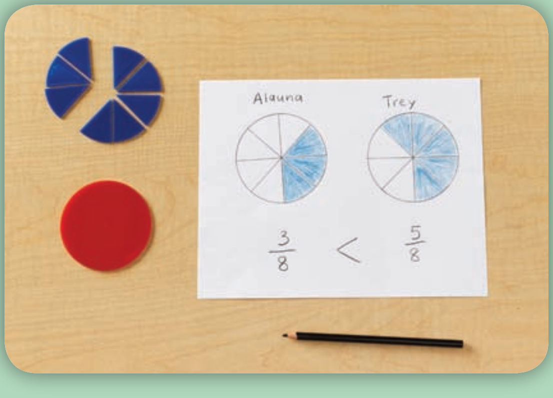
Materials

- Deluxe Rainbow Fraction® Circles (1 set per group)
- paper (1 sheet per group)
- pencils (1 per group)
- colored pencils (1 set per group)



1. Have students find the eighths Fraction Circle and the whole circle. Ask them to trace 2 whole circles side by side onto their paper, write "Alauna" above the first circle, and divide the first circle into eighths. **Say:** *Let's show how much Alauna will eat.* Have students color 3 sections of the first circle and write $\frac{3}{8}$ under the circle.

2. Have students write "Trey" above the second circle and divide it into eighths. **Say:** *Let's show how much Trey will eat.* Have students color 5 sections of the second circle and write $\frac{5}{8}$ under the circle. Have students separate pieces from the eighths Fraction Circle to help them confirm that they have shaded their circles correctly.



3. **Ask:** *Who will eat more of their orange?* Elicit from students that both Alauna and Trey are going to eat some number of eighths and that the numerators tell how many eighths each will eat. Have students write < or > between the fractions to show which is greater.

⚠ Look Out!

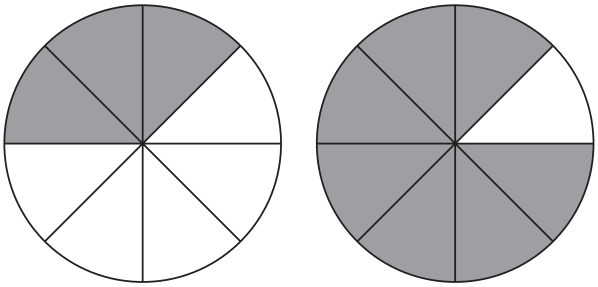
Watch for students who just compare numerators without making note that the denominators are the same. Have students make the models every time to be able to *see* the fractions.

Answer Key

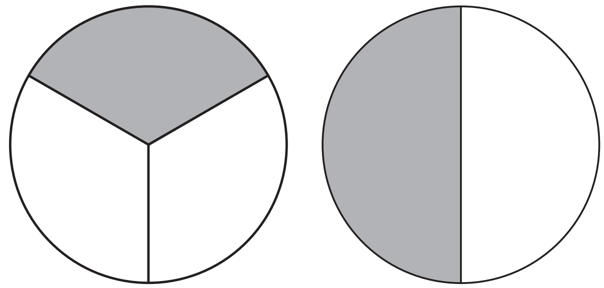
Use Fraction Circles to model each fraction. Compare the fractions. Write <, >, or = to compare.

(Check students' work.)

1. $\frac{3}{8} < \frac{7}{8}$

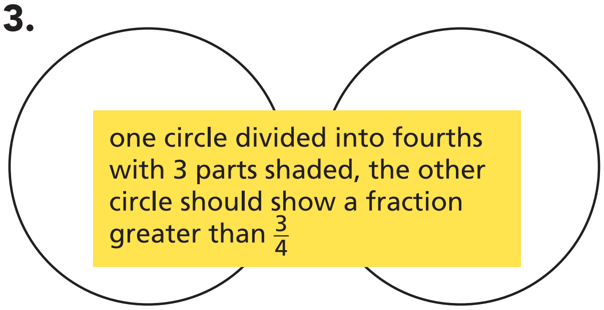


2. $\frac{1}{3} < \frac{1}{2}$



Using Fraction Circles, model the fraction. Draw the model. Build and draw a second fraction that makes the number sentence true. Complete the number sentence.

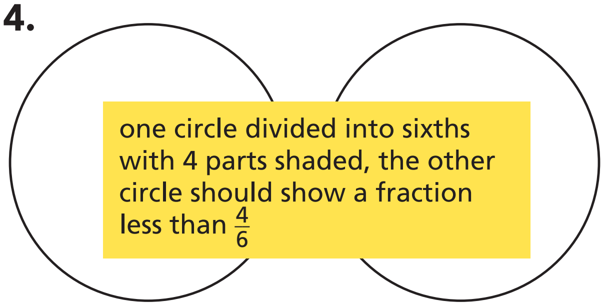
3.



one circle divided into fourths with 3 parts shaded, the other circle should show a fraction greater than $\frac{3}{4}$

$\frac{3}{4} <$ ______

4.



one circle divided into sixths with 4 parts shaded, the other circle should show a fraction less than $\frac{4}{6}$

$\frac{4}{6} >$ ______

Write <, >, or = in each circle to compare.

5. $\frac{1}{2} > \frac{1}{4}$

6. $\frac{2}{4} > \frac{2}{6}$

7. $\frac{3}{5} < \frac{3}{4}$

8. $\frac{5}{8} < \frac{6}{8}$

9. $\frac{2}{3} > \frac{2}{6}$

10. $\frac{5}{10} < \frac{5}{6}$

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Answer Key

Challenge! When comparing fractions, why is it important that you compare fractions of the same whole? Is $\frac{3}{4}$ of an orange greater than $\frac{1}{2}$ of a watermelon?

Challenge: (Sample) The wholes could be different sizes, such as an orange and a watermelon. Since a watermelon is much bigger than an orange, $\frac{1}{2}$ of it would be greater than $\frac{3}{4}$ of an orange.

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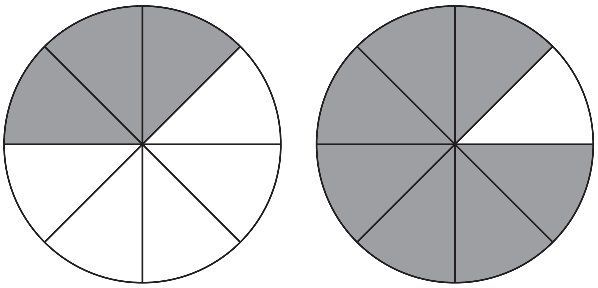
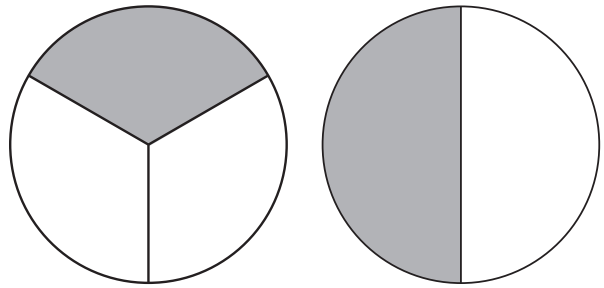
Use Fraction Circles to model each fraction. Compare the fractions. Write <, >, or = to compare.

1. $\frac{3}{8} \bigcirc \frac{7}{8}$

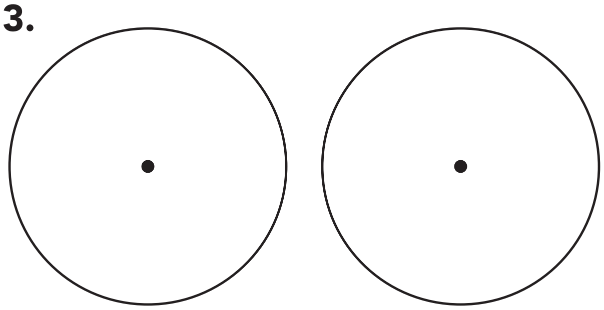


2. $\frac{1}{3} \bigcirc \frac{1}{2}$



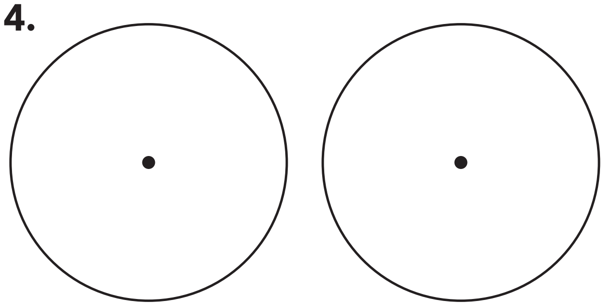
Using Fraction Circles, model the fraction. Draw the model. Build and draw a second fraction that makes the number sentence true. Complete the number sentence.

3.



$\frac{3}{4} <$ ______

4.



$\frac{4}{6} >$ ______

Write <, >, or = in each circle to compare.

5. $\frac{1}{2} \bigcirc \frac{1}{4}$

6. $\frac{2}{4} \bigcirc \frac{2}{6}$

7. $\frac{3}{5} \bigcirc \frac{3}{4}$

8. $\frac{5}{8} \bigcirc \frac{6}{8}$

9. $\frac{2}{3} \bigcirc \frac{2}{6}$

10. $\frac{5}{10} \bigcirc \frac{5}{6}$

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Name ___________________________________

Challenge! When comparing fractions, why is it important that you compare fractions of the same whole? Is $\frac{3}{4}$ of an orange greater than $\frac{1}{2}$ of a watermelon?

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