CHAPTER RESOURCES • Chapter 9
Compare Fractions

INCLUDES
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• Vocabulary Game Directions
• Daily Enrichment Activities
• Reteach Intervention for every lesson
• Chapter 9 Test
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Dear Family,

During the next few weeks, our math class will be learning more about fractions. We will learn how to compare fractions, order fractions, and find equivalent fractions.

You can expect to see homework that provides practice with fractions.

Here is a sample of how your child will be taught to compare fractions that have the same numerator.

### MODEL Compare Fractions with the Same Numerator

This is one way we will be comparing fractions that have the same numerator.

**STEP 1**

Compare $\frac{4}{8}$ and $\frac{4}{6}$.

Look at the numerators.

Each numerator is 4.

The numerators are the same.

**STEP 2**

Since the numerators are the same, look at the denominators, 8 and 6.

The more pieces a whole is divided into, the smaller the pieces are. Eighths are smaller pieces than sixths.

So, $\frac{4}{8}$ is a smaller fraction of the whole than $\frac{4}{6}$.

$\frac{4}{8}$ is less than $\frac{4}{6}$.

### Tips

**Identifying Fewer Pieces**

The fewer pieces a whole is divided into, the larger the pieces are. For example, when a whole is divided into 6 equal pieces, the pieces are larger than when the same size whole is divided into 8 equal pieces. So, $\frac{4}{6}$ is greater than ($>$) $\frac{4}{8}$.

---

**Activity**

Play a card game to help your child practice comparing fractions. On several cards, write a pair of fractions with the same numerator and draw a circle between the fractions. Players take turns drawing a card and telling whether greater than ($>$) or less than ($<$) belongs in the circle.
Querida familia,

Durante las próximas semanas, en la clase de matemáticas aprenderemos más sobre las fracciones. Aprenderemos a comparar y ordenar fracciones, y a hallar fracciones equivalentes.

Llevaré a la casa tareas para practicar las fracciones.

Este es un ejemplo de la manera como aprenderemos a comparar fracciones que tienen el mismo numerador.

MODELÓ Comparar fracciones que tienen el mismo denominador

Esta es una manera como compararemos fracciones que tienen el mismo numerador.

**Paso 1**

Compará $\frac{4}{8}$ y $\frac{4}{6}$

Mira los numeradores.

Cada numerador es 4.

Los numeradores son iguales.

**Paso 2**

Dado que los numeradores son iguales, Mira los denominadores 8 y 6.

Entre más piezas se divida un entero, las piezas serán más pequeñas. Los octavos son piezas más pequeñas que los sextos.

Por lo tanto, $\frac{4}{8}$ es una fracción menor del entero que $\frac{4}{6}$

$\frac{4}{8}$ es menor que $\frac{4}{6}$

Actividad

Ayude a su hijo a comparar fracciones jugando con tarjetas de fracciones. En varias tarjetas, escriba pares de fracciones con el mismo numerador y dibuje un círculo entre las fracciones. Túrnense para dibujar cada tarjeta y decir qué debe ir en el círculo: “mayor que” o “menor que.”

**Vocabulario**

**fracciones equivalentes** Dos o más fracciones que representan la misma cantidad

**mayor que** Símbolo que se usa para comparar dos números. El número mayor se escribe primero (>).

**menor que** Símbolo que se usa para comparar dos números. El número menor se escribe primero (<).
For 3 players

**Materials**
- 4 sets of word cards

**How to Play**
1. Each player is dealt 5 cards. The remaining cards are a draw pile.
2. To take a turn, ask any player if he or she has a word that matches one of your word cards.
3. If the player has the word, he or she gives the card to you, and you must define the word.
   - If you are correct, keep the card and put the matching pair in front of you. Take another turn.
   - If you are wrong, return the card. Your turn is over.
4. If the player does not have the word, he or she answers, “Pick it.” Then you take a card from the draw pile.
5. If the card you draw matches one of your word cards, follow the directions for Step 3 above.
   If it does not, your turn is over.
6. The game is over when one player has no cards left. The player with the most pairs wins.
**Problem Solving • Compare Fractions**

Nick walked \(\frac{2}{4}\) mile to the gym. Then he walked \(\frac{3}{4}\) mile to the store. Which distance is shorter?

<table>
<thead>
<tr>
<th>Read the Problem</th>
<th>Solve the Problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>What do I need to find?</td>
<td></td>
</tr>
<tr>
<td>I need to find which distance is shorter.</td>
<td></td>
</tr>
<tr>
<td>What information do I need to use?</td>
<td></td>
</tr>
<tr>
<td>Nick walked (\frac{2}{4}) mile to the gym. Then he walked (\frac{3}{4}) mile to the store.</td>
<td></td>
</tr>
<tr>
<td>How will I use the information?</td>
<td></td>
</tr>
<tr>
<td>I will use fraction strips and compare the lengths of the models to find which distance is shorter.</td>
<td></td>
</tr>
</tbody>
</table>

\[
\frac{2}{4} \lessdot \frac{3}{4}
\]

The length of the \(\frac{2}{4}\) model is less than the length of the \(\frac{3}{4}\) model.

So, the distance to the gym is shorter.

---

1. Mariana and Shawn each had 6 pages to read. Mariana read \(\frac{2}{3}\) of her pages. Shawn read \(\frac{1}{3}\) of his pages. Who read more pages? Explain.

2. Carlos ran \(\frac{3}{8}\) of the race course. Lori ran \(\frac{3}{6}\) of the same race course. Who ran farther? Explain.
Fraction Frenzy

Use the model to help you compare the fractions. Write < or >.

1. Compare $\frac{3}{8}$ and $\frac{7}{8}$.

2. Compare $\frac{2}{6}$ and $\frac{5}{6}$.

3. Compare $\frac{1}{2}$ and $\frac{1}{4}$.

4. **Write Math** Draw a set of 8 counters and color $\frac{4}{8}$ of the counters red. Draw another set of 8 counters and color $\frac{5}{8}$ red. Write < or > to compare the fraction of red counters in the two sets.
Compare Fractions with the Same Denominator

Pete's Prize Pizzas makes a special pizza. Of the toppings, \( \frac{1}{4} \) is peppers and \( \frac{3}{4} \) is ham. Does the pizza have more peppers or ham?

**Compare \( \frac{1}{4} \) and \( \frac{3}{4} \).**

**Step 1** The denominators of both fractions are the same, 4. Use fraction circles divided into fourths to model the fractions.

**Step 2** Shade 1 part of the first circle to show \( \frac{1}{4} \).
Shade 3 parts of the second circle to show \( \frac{3}{4} \).

**Step 3** Compare. 3 parts is more than 1 part.

\( \frac{3}{4} \succ \frac{1}{4} \)

So, the pizza has more ham.

**Compare. Write \(<, >, \text{ or } = \).**

1. \( \frac{2}{6} \bigcirc \frac{1}{6} \)

2. \( \frac{2}{4} \bigcirc \frac{2}{4} \)

3. \( \frac{1}{3} \bigcirc \frac{2}{3} \)

4. \( \frac{5}{8} \bigcirc \frac{3}{8} \)

5. \( \frac{1}{4} \bigcirc \frac{3}{4} \)

6. \( \frac{4}{8} \bigcirc \frac{4}{8} \)
More or Less

Write all the fractions with the same denominator that can answer the question.

1. Susan ate part of a pizza. She ate more than $\frac{1}{3}$ of the pizza. How much of the pizza might Susan have eaten?

2. Jean read $\frac{1}{4}$ of her book on Monday. She read the same amount on Tuesday. What part of her book did Jean read on Tuesday?

3. Amy began a running program. She ran less than $\frac{5}{6}$ of a mile. What part of a mile could Amy have run?

4. Alex used $\frac{3}{8}$ of a can of paint to paint a chair. He used less than that amount to paint a stool. What part of a can of paint might Alex have used to paint the stool?

5. Paul practiced playing the piano for $\frac{1}{2}$ hour on Friday. He practiced for the same amount of time on Saturday. How long did Paul practice on Saturday?

6. Jolene drove to a state park. She drove $\frac{1}{4}$ of the distance the first day. She drove farther the second day. What part of the distance might Jolene have driven the second day?

Compare Fractions
with the Same Numerator

Ryan takes a survey of his class. \( \frac{1}{8} \) of the class has dogs, and \( \frac{1}{3} \) of the class has cats. Are there more dog owners or cat owners in Ryan’s class?

**Compare the fractions.** \( \frac{1}{8} \bigcirc \frac{1}{3} \)

**Step 1** Divide the first circle into 8 equal parts. Shade \( \frac{1}{8} \) of the circle to show dog owners.

**Step 2** Divide the second circle into 3 equal parts. Shade \( \frac{1}{3} \) of the circle to show cat owners.

**Step 3** Compare the shaded parts of the circles. Which shaded part is larger?

\( \frac{1}{3} \) is larger than \( \frac{1}{8} \). \( \frac{1}{8} \lessdot \frac{1}{3} \)

So, there are more **cat owners** than **dog owners** in Ryan’s class.

**Compare. Write <, >, or =.**

1. \( \frac{3}{4} \bigcirc \frac{3}{6} \)
2. \( \frac{1}{8} \bigcirc \frac{1}{6} \)
3. \( \frac{2}{4} \bigcirc \frac{2}{6} \)

4. \( \frac{2}{3} \bigcirc \frac{2}{6} \)
5. \( \frac{4}{6} \bigcirc \frac{4}{8} \)
6. \( \frac{2}{8} \bigcirc \frac{2}{4} \)

7. \( \frac{5}{6} \bigcirc \frac{5}{8} \)
8. \( \frac{1}{3} \bigcirc \frac{1}{4} \)
9. \( \frac{3}{6} \bigcirc \frac{3}{4} \)

10. \( \frac{1}{3} \bigcirc \frac{1}{3} \)
11. \( \frac{3}{3} \bigcirc \frac{3}{4} \)
12. \( \frac{2}{8} \bigcirc \frac{2}{6} \)
Spin the Wheel of Fractions

Use the spinners for 1–6.

1. Use fractions to compare the white section on Spinner A to the white section on Spinner B.

2. Use fractions to compare the striped sections on Spinner B to the striped sections on Spinner C.

3. Use fractions to compare the gray sections on Spinner B to the gray sections on Spinner A.

4. Use fractions to compare the gray sections on Spinner B to the white sections on Spinner C.

5. Use fractions to compare the striped section and white section combined on Spinner A to the gray sections on Spinner A.

6. Use fractions to compare the white sections on Spinner C to the gray sections on Spinner A.

7. **Stretch Your Thinking** Draw two spinners that are the same size. Divide each spinner into a different number of equal parts. Color two parts on each spinner red. Then use fractions to compare the red parts on your spinners.
Compare Fractions

Mrs. Brown’s recipe uses \( \frac{2}{3} \) cup of flour. Mrs. Young’s recipe uses \( \frac{3}{4} \) cup of flour. Which recipe uses more flour?

Compare \( \frac{2}{3} \) and \( \frac{3}{4} \):

- You can compare fractions using fraction strips.

**Step 1** Model each fraction.

**Step 2** Compare the lengths of the models.

The length of the \( \frac{3}{4} \) model is greater than the length of the \( \frac{2}{3} \) model.

\[
\frac{3}{4} \quad \frac{2}{3}
\]

So, Mrs. Young’s recipe uses more flour.

**Compare \( \frac{3}{6} \) and \( \frac{4}{6} \): Which is greater?**

- The denominators are the same, so compare the numerators.

3 < 4, so \( \frac{3}{6} < \frac{4}{6} \).

So, \( \frac{4}{6} \) is greater than \( \frac{3}{6} \).

**Compare. Write <, >, or =. Write the strategy you used.**

1. \( \frac{2}{8} \quad \bigcirc \quad \frac{3}{8} \)

2. \( \frac{7}{8} \quad \bigcirc \quad \frac{5}{6} \)

3. \( \frac{3}{4} \quad \bigcirc \quad \frac{3}{6} \)

4. \( \frac{3}{6} \quad \bigcirc \quad \frac{5}{6} \)
Food Fractions

Use the recipe for 1–6. Write a comparison statement with fractions for 1–3.

1. Is a lesser amount of dried bananas or raisins used?

2. Is a greater amount of raisins or peanuts used?

3. Is a greater amount of cereal squares or pretzels used?

4. Which ingredient has the least amount in the recipe?

5. Which ingredient has the greatest amount in the recipe?

6. What if \( \frac{2}{2} \) cup of chocolate chips is added to the recipe? Would there be a greater amount of pretzels or chocolate chips?

7. Make up your own recipe or find one at home. Then compare some of the amounts of ingredients.
Compare and Order Fractions

You can use a number line to compare and order fractions.

Order $\frac{5}{8}$, $\frac{2}{8}$, and $\frac{7}{8}$ from least to greatest.

Since you are comparing eighths, use a number line divided into eighths.

**Step 1** Draw a point on the number line to show $\frac{5}{8}$.

**Step 2** Repeat for $\frac{2}{8}$ and $\frac{7}{8}$.

![Number line divided into eighths]

**Step 3** Fractions increase in size as you move right on the number line. Write the fractions in order from left to right.

So, the order from least to greatest is $\frac{2}{8}$, $\frac{5}{8}$, $\frac{7}{8}$.

**Write the fractions in order from least to greatest.**

1. $\frac{4}{6}$, $\frac{6}{6}$, $\frac{3}{6}$

   ![Number line divided into sixths]

   **Think:** When the numerators are the same, look at the denominators to compare the size of the pieces.

2. $\frac{2}{3}$, $\frac{2}{6}$, $\frac{2}{4}$

3. $\frac{1}{4}$, $\frac{1}{8}$, $\frac{1}{2}$

4. $\frac{3}{4}$, $\frac{0}{4}$, $\frac{2}{4}$
Race to the Fraction Line

Use the table for 1–7.

<table>
<thead>
<tr>
<th>Runners</th>
<th>Jean</th>
<th>Shannon</th>
<th>Sally</th>
<th>Julie</th>
<th>Rachel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fraction of Race Completed After 30 Minutes</td>
<td>$\frac{3}{8}$</td>
<td>$\frac{3}{4}$</td>
<td>$\frac{1}{4}$</td>
<td>$\frac{2}{4}$</td>
<td>$\frac{5}{8}$</td>
</tr>
</tbody>
</table>

1. Who is closest to the finish line? What fraction of the race has she run?

2. Who is farthest from the finish line?

3. List Jean, Shannon, and Sally in order from the closest to the finish line to the farthest.

4. List Shannon, Julie, and Rachel in order from the farthest from the finish line to the closest.

5. List all the fractions of the race completed in order from closest to the finish line to the farthest.

6. List all the runners in order from farthest from the finish line to the closest.

7. Ashley is another runner, and she has completed $\frac{7}{8}$ of the race. Is she closest to the finish line? **Explain** your answer.
Model Equivalent Fractions

Equivalent fractions are two or more fractions that name the same amount.

You can use fraction circles to model equivalent fractions.

Find a fraction that is equivalent to $\frac{1}{2}$. $\frac{1}{2} = \square \frac{4}{4}$

Step 1 Look at the first circle. It is divided into 2 equal parts. Shade one part to show $\frac{1}{2}$.

Step 2 Draw a line to divide the circle into 4 equal parts because 4 is the denominator in the second fraction.

Step 3 Count the number of parts shaded now. There are 2 parts out of 4 parts shaded.

$\frac{1}{2} = \frac{2}{4}$ So, $\frac{1}{2}$ is equivalent to $\frac{2}{4}$.

Shade the model. Then divide the pieces to find the equivalent fraction.

1. 

![Diagram of a circle divided into 4 parts, with 2 parts shaded.]

$\frac{1}{4} = \square \frac{8}{8}$

2. 

![Diagram of a circle divided into 4 parts, with 1 part shaded.]

$\frac{1}{2} = \square \frac{8}{8}$

3. 

![Diagram of a circle divided into 3 parts, with 2 parts shaded.]

$\frac{2}{3} = \square \frac{6}{6}$

4. 

![Diagram of a circle divided into 4 parts, with 3 parts shaded.]

$\frac{3}{4} = \square \frac{8}{8}$
Name Equivalent Fractions

For each of the following shapes, shade some of the parts. Write the fraction that represents the parts you shaded. Then use the shape to write an equivalent fraction for the parts you shaded.

1. 
   Fraction: __________
   Equivalent Fraction: __________

2. 
   Fraction: __________
   Equivalent Fraction: __________

3. 
   Fraction: __________
   Equivalent Fraction: __________

4. 
   Fraction: __________
   Equivalent Fraction: __________

5. 
   Fraction: __________
   Equivalent Fraction: __________

6. 
   Fraction: __________
   Equivalent Fraction: __________

7. **Stretch Your Thinking** Draw a model that shows \(\frac{3}{3}\) shaded. Then use your drawing to find two equivalent fractions.
Equivalent Fractions

Kaitlyn used $\frac{3}{4}$ of a sheet of wrapping paper.

Find a fraction that is equivalent to $\frac{3}{4}$.  $\frac{3}{4} = \square \frac{8}{8}$

Step 1  The top fraction strip is divided into 4 equal parts.
Shade $\frac{3}{4}$ of the strip to show how much paper Kaitlyn used.

Step 2  The bottom strip is divided into 8 equal parts.
Shade parts of the strip until the same amount is shaded as in the top strip.
6 parts of the bottom strip are shaded.

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

So, $\frac{6}{8}$ is equivalent to $\frac{3}{4}$.

Each shape is 1 whole. Shade the model to find the equivalent fraction.

1. 

2. 

3. 

$\frac{1}{3} = \square \frac{6}{6}$

$\frac{1}{4} = \square \frac{8}{8}$

$\frac{4}{2} = \square \frac{8}{8}$
Fractions Equal Fun

Use equivalent fractions and the information in the table for 1–6.

<table>
<thead>
<tr>
<th>Friend</th>
<th>Steve</th>
<th>Kim</th>
<th>Mary</th>
<th>Damon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fraction of Marbles That Are a Solid Color</td>
<td>1/8</td>
<td>2/3</td>
<td>1/6</td>
<td>3/4</td>
</tr>
<tr>
<td>Fraction of Marbles That Are Striped</td>
<td>7/8</td>
<td>1/3</td>
<td>5/6</td>
<td>1/4</td>
</tr>
</tbody>
</table>

1. If Steve has 16 marbles, how many are a solid color?

2. If Damon has 20 marbles altogether, how many of them are striped?

3. If Kim has 12 solid-color marbles, how many marbles does she have altogether?

4. If Mary has 10 striped marbles, how many marbles does she have altogether?

5. **What if** Mary has 15 striped marbles? How many solid-color marbles does she have?

6. If Steve has 4 solid-color marbles, how many marbles does he have altogether?

7. **Stretch Your Thinking** Ann arranges her marbles in groups, with 8 marbles in each group. She writes the fraction \( \frac{5}{8} \) to show the fraction of marbles in each group that is red. What equivalent fraction names the fraction of marbles in 6 groups that are red? **Explain.**
1. Frank and Dwayne weed their gardens that are the same size. Frank’s garden is divided into 6 equal sections. Dwayne’s garden is divided into 4 equal sections. Each boy has weeded 2 sections of his garden.

Write a fraction to describe what part of his garden each boy has weeded. Then tell who weeded a larger area. Explain.

2. Eli, Beth, and Cory are reading the same book for class. Eli read $\frac{3}{4}$ of his book. Beth read $\frac{3}{8}$ of her book and Cory read $\frac{3}{6}$ of his book.

For 2a–2d, choose Yes or No to indicate whether the comparisons are correct.

2a. $\frac{3}{4} > \frac{3}{8}$  
   ○ Yes  ○ No

2b. $\frac{3}{6} < \frac{3}{8}$  
   ○ Yes  ○ No

2c. $\frac{3}{8} = \frac{3}{6}$  
   ○ Yes  ○ No

2d. $\frac{3}{6} < \frac{3}{4}$  
   ○ Yes  ○ No

3. Mark and Lisa are on the swim team. Mark swims $\frac{3}{8}$ mile each day. Lisa swims $\frac{5}{8}$ mile each day. Which statement is correct? Mark all that apply.

A  Mark swims farther than Lisa each day.

B  Lisa swims the same distance as Mark each day.

C  Lisa swims less than 1 mile each day.

D  Lisa swims farther than Mark each day.
4. MacKenzie and Cassie used fabric to make costumes for a play. MacKenzie used \( \frac{3}{4} \) yard of fabric and Cassie used \( \frac{5}{6} \) yard. Who used more fabric? Explain the strategy you used to solve the problem.

5. The soccer team practices passing for \( \frac{3}{4} \) hour and shooting for \( \frac{4}{5} \) hour. On which drill does the team spend less time? Explain how you can use the model to find the answer.

6. Andrew bought \( \frac{7}{8} \) pound of mixed nuts. Margaret bought \( \frac{5}{8} \) pound of mixed nuts.

Use the fractions and symbols to show which amount is greater.
7. Mr. Worth opened new jars of 4 different colors of paint for an art project. All of the jars were the same size.

Part A

Draw lines to show how Mr. Worth could divide one jar of paint into halves, one into thirds, one into fourths, and one into sixths.

Part B

Students in his class used an equivalent amount of two paint colors. Use the models to show the amount of paints used. Write two pairs of equivalent fractions to represent the models.

8. Dalton rode his skateboard for \( \frac{3}{4} \) mile. Amelia rode her skateboard for an equal distance. What is an equivalent fraction that describes how far Amelia rode? Use the models to show your work.

9. Mr. Barrows opens 2 packs of paper. He puts \( \frac{2}{3} \) of a pack in one pile and \( \frac{3}{5} \) of a pack in another pile. Which pile has more paper? Show your work.
10. Treyvon watched $\frac{2}{3}$ of a movie. Juan watched $\frac{2}{6}$ of the same movie. Use $>$, $=$, or $<$ to compare the parts that they watched.

11. Alison used $\frac{7}{8}$ quart of orange juice and $\frac{3}{8}$ quart of cranberry juice to make some punch.

For 11a–11d, select True or False for each comparison.

11a. $\frac{7}{8} < \frac{3}{8}$  
   ○ True  ○ False

11b. $\frac{7}{8} > \frac{3}{8}$  
   ○ True  ○ False

11c. $\frac{3}{8} < \frac{7}{8}$  
   ○ True  ○ False

11d. $\frac{3}{8} = \frac{7}{8}$  
   ○ True  ○ False

12. Will, Ann, and Jim are working on their science fair projects. Will has finished $\frac{1}{4}$ of his project. Ann has finished $\frac{3}{4}$ of her project, and Jim has finished $\frac{2}{3}$ of his project.

**Part A**

Who has finished less of their project, Will or Ann? Explain how you know.

**Part B**

Who has finished less of their project, Ann or Jim? Explain how you know.
13. Sarah needs \( \frac{4}{6} \) yard of ribbon to wrap a gift. She has 6 pieces of ribbon with the following lengths. She can cut the piece if it is too long. Mark all of the pieces of ribbon that Sarah could use.

A \( \frac{1}{2} \) yard  
B \( \frac{6}{6} \) yard  
C \( \frac{3}{8} \) yard  
D \( \frac{4}{4} \) yard  
E \( \frac{1}{3} \) yard  
F \( \frac{5}{6} \) yard

14. There are 8 people having breakfast. Each person wants \( \frac{1}{2} \) of an omelet. How many whole omelets are needed? Use the models to show your answer.

[Diagram of omelets]

___ omelets

15. Michele mixed \( \frac{3}{4} \) cup of flour with \( \frac{1}{2} \) cup of water to make paste for an art project. Compare the fractions. Choose the symbol that makes the statement true.

\[
\frac{3}{4} < \frac{1}{2} \\
\frac{3}{4} = \frac{1}{2} \\
\frac{3}{4} > \frac{1}{2}
\]

16. Jeff has three boxes that weigh \( \frac{5}{8} \), \( \frac{1}{8} \), and \( \frac{3}{8} \) pound. Write the weights in order from least to greatest.
17. Ben measures the lengths of three insects. Draw a line to match each length on the left to the word on the right that describes its place in the order of lengths.

\[
\begin{array}{ccc}
\frac{3}{4} \text{ inch} & \cdots & \text{least} \\
\frac{3}{8} \text{ inch} & \cdots & \text{between} \\
\frac{3}{6} \text{ inch} & \cdots & \text{greatest}
\end{array}
\]

18. Kerri drew a model to show equivalent fractions.

Use the model to complete the number sentence.

\[
\frac{2}{3} = \quad \quad \quad \quad \quad \\
\]

19. Elaine brought \(\frac{3}{4}\) pound of potato salad to a picnic. Jake brought \(\frac{2}{3}\) pound of macaroni salad. Who brought more salad? Explain the strategy you used to solve the problem.

   
   
   

20. It took Mike \(\frac{2}{6}\) hour to clean his room.

   What fraction is equivalent to \(\frac{2}{6}\)?

   

STOP
Making a Mural

Noreen and Hakim are in art class. They work with paper and ribbons to make shapes and designs for a mural. They use a large piece of paper to cover a wall for their mural.

1. Noreen paints $\frac{3}{6}$ of the mural yellow. Hakim paints $\frac{3}{8}$ of the mural green. Who paints a larger piece of the mural? Draw a model to compare the fractions. Then write a fraction sentence using $>$ or $<$. Solve the problem.

2. Hakim stretches a green ribbon across $\frac{2}{6}$ of the mural. He stretches a blue ribbon across $\frac{5}{6}$ of the mural. Which ribbon is longer? Draw a fraction strip to compare the fractions. Then write a fraction sentence using $>$ or $<$. Solve the problem.
3. If Hakim added a red ribbon that is longer than the green ribbon, but shorter than the blue ribbon, then how much of the mural could the ribbon stretch across? Write a fraction. Show your work.

______________________________

4. Hakim pastes paper strips from the bottom of the mural to the top. A red paper strip reaches \( \frac{7}{8} \) of the way to the top. A purple strip reaches \( \frac{3}{8} \) of the way to the top. A green strip reaches \( \frac{6}{8} \) of the way to the top. Put the paper strips in order from least to greatest. Draw number lines to compare. Write the colors and fractions in order. Then use symbols (\(<, >\)) to compare the fractions.

5. Noreen cuts out 3 paper circles to put on the mural. She divides one circle into fourths, one into sixths, and one into eighths. She wants to put glitter on some parts of the paper circles.
   a. Draw circles to show Noreen’s work.
   b. Noreen puts the glitter on equivalent parts of all the circles. Shade the 3 circles to show equivalent parts. Then write two pairs of equivalent fractions.
Chapter 9

Compare Fractions

Making a Mural

COMMON CORE STANDARDS

3.NF.A.3 Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.

a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.

b. Recognize and generate simple equivalent fractions, e.g., \( \frac{1}{2} = \frac{2}{4} \), \( \frac{3}{6} = \frac{1}{2} \). Explain why the fractions are equivalent, e.g., by using a visual fraction model.

d. 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.

PURPOSE

To assess the ability to compare fractions

TIME

25–30 minutes

GROUPING

Individuals

MATERIALS

• Performance Task, paper, pencil
• Fraction bars (optional)

PREPARATION HINTS

• Review showing equal parts and parts of a whole with students before assigning the task.
• Review showing a fraction of a group with students before assigning the task.

IMPLEMENTATION NOTES

• Read the task aloud to students and make sure that all students have a clear understanding of the task.
• Students may use manipulatives to complete the task.
• Allow students as much paper as they need to complete the task.
• Allow as much time as students need to complete the task.
• Students must complete the task individually, without collaboration.
• Collect all student work when the task is complete.
TASK SUMMARY
Students draw pictures to compare and order fractions, and show equivalent fractions.

REPRESENTATION
In this task, teachers can…
• Provide options for comprehension by linking strategies to prior knowledge of fractional parts of a whole and equal parts.
• Provide multiple means of representation by presenting concepts with physical models and manipulatives.

ACTION and EXPRESSION
In this task, teachers can…
• Provide options for physical action by offering fraction strips for students to use as they draw fractional parts.
• Use multiple means of communication by allowing students to use computer design programs to practice comparing fractions.

ENGAGEMENT
In this task, teachers can…
• Increase mastery by providing feedback that is substantive and informative.
• Optimize relevance by asking students to give examples of fractions at home, in school and in their personal lives.

EXPECTED STUDENT OUTCOMES
• Complete the task within the time allowed
• Reflect engagement in a productive struggle
• Solve problems by comparing fractions

SCORING
Use the associated Rubric to evaluate each student’s work.
## Performance Task Rubric

### MAKING A MURAL

| A level 3 response | Indicates that the student has made sense of the task, modeled accurately, and persevered  
|                    | Shows the ability to accurately solve fraction problems by comparing fractions, ordering fractions, and finding equivalent fractions  
|                    | Demonstrates the ability to compare fractions with the same numerator or denominator by reasoning about their size  
|                    | Addresses all aspects of the task including representing fractions with drawings and explaining mathematical reasoning  

| A level 2 response | Indicates that the student has made sense of the task, modeled accurately, and persevered  
|                    | Shows the ability to accurately solve fraction problems by comparing fractions, ordering fractions, and finding equivalent fractions  
|                    | Demonstrates the ability to compare fractions by reasoning about their size  
|                    | Addresses all or most elements of the task including representing fractions with drawings and explaining mathematical reasoning  
|                    | May include minor errors of omission  

| A level 1 response | Shows that the student has made sense of at least some elements of the task  
|                    | Shows evidence of understanding some basic concepts of fractions  
|                    | May not include accurately drawn fractions or explanations of mathematical reasoning  
|                    | May not show an understanding of relative size of fractional parts  

| A level 0 response | Shows little evidence that the student has made sense of the task  
|                    | Reflects a lack of understanding of comparing fractions by comparing numerators and denominators  
|                    | Shows little evidence of addressing the elements of the task  
|                    | May include incorrectly or inappropriately applied mathematical reasoning  

A Barbeque

The community center is having a barbeque. Many people bring food and games to the barbeque. Use your knowledge of fractions to solve the problems.

1. Zach’s family brings a large sandwich to the picnic. They cut the sandwich into 8 equal parts. Four people each take one piece of the sandwich.

   a. Draw a picture to show the sandwich. Shade the parts that were eaten.

   b. Write a fraction to show how much of the sandwich was eaten.

   c. Draw another sandwich cut into 4 equal parts. Shade the sandwich to show an equivalent fraction to the sandwich Zach’s family brought to the picnic.

   d. Then write a pair of equivalent fractions for the sandwiches.
2. Mrs. Lin brings 6 trays of hamburger buns to the picnic. \( \frac{2}{3} \) of the trays have wheat buns.
   
   a. How many of the buns are wheat buns? Draw a diagram to solve the problem.

   b. Write a pair of equivalent fractions for the diagram that you drew. Explain why the fractions are equivalent.

3. Mr. Sanchez brings a tray of 6 granola bars to the barbeque. The bars are equal-size pieces. Four people share each of the bars equally.
   
   a. Explain how they could divide all the bars so each person gets the same amount. Draw pictures to show your thinking.

   b. Suppose the four people only eat 4 equal-size pieces of granola bars. Compare the number of granola bars that were eaten with the number of bars not eaten. Write a fraction sentence. Use >, <, or =.
4. William and Cassie bring pies to the barbeque. They cut them into different parts and serve them.

   a. The table shows the parts of pie people ate. Shade each pie to show what was eaten. Then write the fraction.

<table>
<thead>
<tr>
<th>three sixths</th>
<th>four eighths</th>
<th>three fourths</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Pie Image]</td>
<td>![Pie Image]</td>
<td>![Pie Image]</td>
</tr>
</tbody>
</table>

   ———— ———— ————

   b. Look at the pies you shaded. Which two show equivalent fractions? Write a pair of equivalent fractions.

   ————

   c. Which two fractions have the same numerator? Compare the fractions. Write a sentence using > or <.

   ———— ———— ————

   d. Look at the fraction you drew for four-eighths. Write a fraction that is greater. Write a fraction that is less. Then write the fractions in order from least to greatest.

   ———— ———— ————

   ————

   ————

   ————
5. Milos brings 12 hamburgers to the picnic. He puts cheese on 4 hamburgers.
   a. Draw to show the fraction. Write two equivalent fractions. Explain why they are equivalent fractions.

   ___________________________________________________________________
   ___________________________________________________________________
   ___________________________________________________________________
   ___________________________________________________________________

   b. Milos says that \( \frac{4}{8} \) of the hamburgers have cheese. Explain why Milos is correct or incorrect.

   ___________________________________________________________________
   ___________________________________________________________________
   ___________________________________________________________________
   ___________________________________________________________________

6. There is a track next to the barbecue area. The track is \( \frac{1}{4} \) mile long. A group of students have a relay race. They run back and forth on the track 4 times.
   a. Draw a number line to show how many miles the students ran. Use 0 and 1 as points on your number line. Divide the number line into equal parts to solve the problem. Then write an equivalent fraction.

   ___________________________________________________________________

   b. Suppose the students ran the track 8 more times. Write a fraction to show how many miles they ran.

   ___________________________________________________________________
Fractions

A Barbeque

COMMON CORE STANDARDS

3.NF.A.1 Understand a fraction $\frac{a}{b}$ as the quantity formed by $a$ parts of size $\frac{1}{b}$.

3.NF.A.2 Understand a fraction as a number on the number line; represent fractions on a number line diagram.
   a. Represent a fraction $\frac{1}{b}$ on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into $b$ equal parts. Recognize that each part has size $\frac{1}{b}$ and that the endpoint of the part based at 0 locates the number $\frac{1}{b}$ on the number line.
   b. Represent a fraction $\frac{a}{b}$ on a number line diagram by marking off $a$ lengths $\frac{1}{b}$ from 0. Recognize that the resulting interval has size $\frac{a}{b}$ and that its endpoint locates the number $\frac{a}{b}$ on the number line.

3.NF.A.3 Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.
   a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.
   b. Recognize and generate simple equivalent fractions. Explain why the fractions are equivalent.
   c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers.
   d. 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.

PURPOSE
To assess the ability to use fractions to describe how much or how many, and to compare and write equivalent fractions

TIME
40–45 minutes

GROUPING
Individuals

MATERIALS
- Performance Task, paper, pencil
- Fraction bars (optional)

PREPARATION HINTS
- Review showing parts of a whole and a fraction of a group before assigning the task.
- Review comparing unequal fractional parts with the same numerator and denominator before assigning the task.
IMPLEMENTATION NOTES

- Read the task aloud to students and make sure that all students have a clear understanding of the task.
- Students may use manipulatives to complete the task.
- Allow students as much paper as they need to complete the task.
- Allow as much time as students need to complete the task.
- Students must complete the task individually, without collaboration.
- Collect all student work when the task is complete.

TASK SUMMARY

Students draw pictures to show fraction concepts including parts of a whole, equal shares, fractions of a whole, fractions on a number line, and finding unit fractions. They draw pictures to compare and order fractions and show equivalent fractions.

REPRESENTATION

In this task, teachers can…

- Provide multiple means of representation by presenting concepts with physical models and manipulatives.
- Provide options for comprehension by using multiple examples to draw attention to big ideas and critical fraction concepts.

ACTION and EXPRESSION

In this task, teachers can…

- Provide options for physical action by offering fraction strips for students to use as they draw fractional parts.
- Provide options for monitoring progress by showing representations of progress such as portfolios.

ENGAGEMENT

In this task, teachers can…

- Help students meet goals and objectives by prompting them to restate the goal and to explain what it means to succeed at the goal.
- Increase mastery by providing feedback that encourages perseverance and the use of specific strategies.

EXPECTED STUDENT OUTCOMES

- Complete the task within the time allowed
- Reflect engagement in a productive struggle
- Solve problems using fractions

SCORING

Use the associated Rubric to evaluate each student’s work.
### Performance Task Rubric

#### A Barbeque

**A level 3 response**
- Indicates that the student has made sense of the task, modeled accurately, and persevered
- Shows the ability to accurately solve fraction problems by drawing and writing fractions, comparing and ordering fractions, and finding equivalent fractions
- Demonstrates the ability to compare fractions by reasoning about their size and writing equivalents
- Addresses all aspects of the task including representing fractions with drawings and explaining mathematical reasoning

**A level 2 response**
- Indicates that the student has made sense of the task, modeled accurately, and persevered
- Shows the ability to accurately solve fraction problems by drawing and writing fractions, comparing and ordering fractions, and finding equivalent fractions
- Shows evidence of the ability to compare fractions by reasoning about their size and writing equivalents
- Addresses all or most elements of the task including representing fractions with drawings and explaining mathematical reasoning
- May include minor errors of omission

**A level 1 response**
- Shows that the student has made sense of at least some elements of the task
- Shows evidence of understanding some basic concepts of fractions
- May not include accurately drawn fractions or explanations of mathematical reasoning
- May not show an understanding of relative size of fractional parts or equivalents

**A level 0 response**
- Shows little evidence that the student has made sense of the task
- Reflects a lack of understanding of comparing fractions or writing equivalents
- Shows little evidence of addressing the elements of the task
- May include incorrectly or inappropriately applied mathematical reasoning
4. MacKenzie and Cassie used fabric to make costumes for a play. MacKenzie used $\frac{3}{4}$ yard of fabric and Cassie used $\frac{5}{6}$ yard. Who used more fabric? Explain the strategy you used to solve the problem.

Cassie; Possible explanation: I used the missing pieces strategy. Cassie's measurement is missing $\frac{1}{6}$ and MacKenzie's measurement is missing $\frac{1}{4}$, so MacKenzie had the larger missing piece and Cassie used more fabric.

5. The soccer team practices passing for $\frac{3}{4}$ hour and shooting for $\frac{4}{5}$ hour. On which drill does the team spend less time? Explain how you can use the model to find the answer.

Passing; the model for $\frac{3}{4}$ is shorter than the model for $\frac{4}{5}$.

6. Andrew bought $\frac{7}{8}$ pound of mixed nuts. Margaret bought $\frac{5}{8}$ pound of mixed nuts.

Use the fractions and symbols to show which amount is greater.

$\frac{5}{8} < \frac{7}{8}$ or $\frac{7}{8} > \frac{5}{8}$.
10. Treyvon watched $\frac{2}{8}$ of a movie. Juan watched $\frac{2}{6}$ of the same movie. Use $>$, $=$, or $<$ to compare the parts that they watched.

$$\frac{2}{8} \quad \text{or} \quad \frac{2}{6}$$

11. Alison used $\frac{7}{8}$ quart of orange juice and $\frac{3}{8}$ quart of cranberry juice to make some punch.

For 11a–11d, select True or False for each comparison.

- 11a. $\frac{7}{8} < \frac{3}{8}$
  - True
  - False

- 11b. $\frac{7}{8} > \frac{3}{8}$
  - True
  - False

- 11c. $\frac{3}{8} < \frac{7}{8}$
  - True
  - False

- 11d. $\frac{3}{8} = \frac{7}{8}$
  - True
  - False

12. Will, Ann, and Jim are working on their science fair projects. Will has finished $\frac{1}{4}$ of his project. Ann has finished $\frac{3}{4}$ of her project, and Jim has finished $\frac{2}{3}$ of his project.

Part A
Who has finished less of their project, Will or Ann? Explain how you know.

Will; Possible explanation: $\frac{1}{4}$ and $\frac{3}{4}$ have the same denominator, so I can compare numerators. $1$ is less than $3$, so $\frac{1}{4}$ is less than $\frac{3}{4}$.

Part B
Who has finished less of their project, Ann or Jim? Explain how you know.

Jim; Possible explanation: I can use the missing pieces strategy to compare the fractions. $\frac{2}{3}$ will have a larger missing piece than $\frac{3}{4}$, so $\frac{2}{3}$ is less than $\frac{3}{4}$.
17. Ben measures the lengths of three insects. Draw a line to match each length on the left to the word on the right that describes its place in the order of lengths.

3 _ 6 inch greatest
3 _ 8 inch between
3 _ 4 inch least

18. Kerri drew a model to show equivalent fractions.

Use the model to complete the number sentence.

\[
\frac{2}{3} = \frac{4}{6}
\]

19. Elaine brought \( \frac{3}{4} \) pound of potato salad to a picnic. Jake brought \( \frac{2}{3} \) pound of macaroni salad. Who brought more salad? Explain the strategy you used to solve the problem.

Elaine: Possible explanation: I think about the missing piece from \( \frac{3}{4} \) which is \( \frac{1}{4} \), and the missing piece from \( \frac{2}{3} \) which is \( \frac{1}{3} \). \( \frac{1}{4} < \frac{1}{3} \), and the fraction with the smaller missing piece is larger.

20. It took Mike \( \frac{5}{6} \) hour to clean his room.

What fraction is equivalent to \( \frac{2}{3} \)?

\[
\frac{1}{3} \quad \frac{2}{6}
\]
Making a Mural

Noreen and Hakim are in art class. They work with paper and ribbons to make shapes and designs for a mural. They use a large piece of paper to cover a wall for their mural.

1. Noreen paints \( \frac{3}{6} \) of the mural yellow. Hakim paints \( \frac{3}{8} \) of the mural green. Who paints a larger piece of the mural? Draw a model to compare the fractions. Then write a fraction sentence using > or <. Solve the problem.

Noreen paints more of the mural.

2. Hakim stretches a green ribbon across \( \frac{3}{8} \) of the mural. He stretches a blue ribbon across \( \frac{3}{6} \) of the mural. Which ribbon is longer? Draw a fraction strip to compare the fractions. Then write a fraction sentence using > or <. Solve the problem.

The blue ribbon is longer.

3. If Hakim added a red ribbon that is longer than the green ribbon, but shorter than the blue ribbon, then how much of the mural could the ribbon stretch across? Write a fraction. Show your work.

4. Hakim pastes paper strips from the bottom of the mural to the top. A red paper strip reaches \( \frac{5}{6} \) of the way to the top. A purple strip reaches \( \frac{3}{8} \) of the way to the top. A green strip reaches \( \frac{7}{8} \) of the way to the top. Put the paper strips in order from least to greatest. Draw number lines to compare. Write the colors and fractions in order. Then use symbols (\(<\), >) to compare the fractions.

5. Noreen cuts out 3 paper circles to put on the mural. She divides one circle into fourths, one into sixths, and one into eighths. She wants to put glitter on some parts of the paper circles.
   a. Draw circles to show Noreen's work.

   b. Noreen puts the glitter on equivalent parts of all the circles. Shade the circles to show equivalent parts. Then write two pairs of equivalent fractions.

\[
\frac{3}{6} = \frac{1}{2}, \quad \frac{4}{8} = \frac{1}{2}, \quad \frac{2}{3} = \frac{6}{9}
\]
Making a Mural

Noreen and Hakim are in art class. They work with paper and ribbons to make shapes and designs for a mural. They use a large piece of paper to cover a wall for their mural.

1. Noreen paints \( \frac{3}{6} \) of the mural yellow. Hakim paints \( \frac{3}{8} \) of the mural green. Who paints a larger piece of the mural? Draw a model to compare the fractions. Then write a fraction sentence using > or <. Solve the problem.

\[
\frac{3}{6} \quad > \quad \frac{3}{8}
\]

2. Hakim stretches a green ribbon across \( \frac{5}{6} \) of the mural. He stretches a blue ribbon across \( \frac{5}{6} \) of the mural. Which ribbon is longer? Draw a fraction strip to compare the fractions. Then write a fraction sentence using > or <. Solve the problem.

\[
\frac{2}{6} \quad \square \quad \frac{5}{6}
\]

3. If Hakim added a red ribbon that is longer than the green ribbon, but shorter than the blue ribbon, then how much of the mural could the ribbon stretch across? Write a fraction. Show your work.

\[
\frac{4}{6}
\]

\[
\frac{2}{6} \quad - \quad \frac{5}{6}
\]

4. Hakim pastes paper strips from the bottom of the mural to the top. A red paper strip reaches \( \frac{3}{8} \) of the way to the top. A purple strip reaches \( \frac{4}{6} \) of the way to the top. A green strip reaches \( \frac{5}{8} \) of the way to the top. Put the paper strips in order from least to greatest. Draw number lines to compare. Write the colors and fractions in order. Then use symbols (<, >) to compare the fractions.

\[
\frac{3}{8}, \frac{6}{8}, \frac{7}{8}, \frac{5}{6}, \frac{4}{8}, \frac{7}{8}
\]

Purple \( \frac{3}{8} \) Green \( \frac{6}{8} \)
Red \( \frac{7}{8} \)

5. Noreen cuts out 3 paper circles to put on the mural. She divides one circle into fourths, one into sixths, and one into eighths. She wants to put glitter on some parts of the paper circles.

a. Draw circles to show Noreen’s work.

b. Noreen puts the glitter on equivalent parts of all the circles. Shade the 3 circles to show equivalent parts. Then write two pairs of equivalent fractions.

\[
\frac{2}{4}, \frac{1}{2}, \frac{3}{6}, \frac{6}{12}, \frac{1}{8}, \frac{8}{16}
\]

\[
\frac{2}{4} \quad \frac{3}{6} \quad \frac{4}{8}
\]

\[
\frac{4}{8} \quad \frac{6}{12} \quad \frac{8}{16}
\]
Making a Mural

Noreen and Hakim are in art class. They work with paper and ribbons to make shapes and designs for a mural. They use a large piece of paper to cover a wall for their mural.

1. Noreen paints \( \frac{3}{6} \) of the mural yellow. Hakim paints \( \frac{3}{8} \) of the mural green. Who paints a larger piece of the mural? Draw a model to compare the fractions. Then write a fraction sentence using > or <. Solve the problem.

2. Hakim stretches a green ribbon across \( \frac{3}{8} \) of the mural. He stretches a blue ribbon across \( \frac{3}{6} \) of the mural. Which ribbon is longer? Draw a fraction strip to compare the fractions. Then write a fraction sentence using > or <. Solve the problem.

3. If Hakim added a red ribbon that is longer than the green ribbon, but shorter than the blue ribbon, then how much of the mural could the ribbon stretch across? Write a fraction. Show your work.

\[
\frac{2}{6} \quad \frac{5}{8}
\]

4. Hakim pastes paper strips from the bottom of the mural to the top. A red paper strip reaches \( \frac{3}{6} \) of the way to the top. A purple strip reaches \( \frac{4}{8} \) of the way to the top. A green strip reaches \( \frac{5}{6} \) of the way to the top. Put the paper strips in order from least to greatest. Draw number lines to compare. Write the colors and fractions in order. Then use symbols (\( <, > \)) to compare the fractions.

5. Noreen cuts out 3 paper circles to put on the mural. She divides one circle into fourths, one into sixths, and one into eighths. She wants to put glitter on some parts of the paper circles.
   a. Draw circles to show Noreen’s work.

   ![Diagram]

   b. Noreen puts the glitter on equivalent parts of all the circles. Shade the circles to show equivalent parts. Then write two pairs of equivalent fractions.

   \[
   \frac{5}{8} \quad \frac{5}{6} \quad \frac{2}{4}
   \]
Name ________________

**Chapter 9**

**Making a Mural**

Noreen and Hakim are in art class. They work with paper and ribbons to make shapes and designs for a mural. They use a large piece of paper to cover a wall for their mural.

1. Noreen paints $\frac{3}{6}$ of the mural yellow. Hakim paints $\frac{3}{6}$ of the mural green. Who paints a larger piece of the mural? Draw a model to compare the fractions. Then write a fraction sentence using $>$ or $<$. Solve the problem.

\[ \frac{3}{6} \quad \square \quad \frac{3}{6} \]

2. Hakim stretches a green ribbon across $\frac{2}{6}$ of the mural. He stretches a blue ribbon across $\frac{2}{6}$ of the mural. Which ribbon is longer? Draw a fraction strip to compare the fractions. Then write a fraction sentence using $>$ or $<$. Solve the problem.

\[ \frac{5}{6} \quad \square \quad \frac{2}{6} \]

3. If Hakim added a red ribbon that is longer than the green ribbon, but shorter than the blue ribbon, then how much of the mural could the ribbon stretch across? Write a fraction. Show your work.

\[ \frac{3}{6} \]

4. Hakim pastes paper strips from the bottom of the mural to the top. A red paper strip reaches $\frac{2}{6}$ of the way to the top. A purple strip reaches $\frac{4}{6}$ of the way to the top. A green strip reaches $\frac{5}{6}$ of the way to the top. Put the paper strips in order from least to greatest. Draw number lines to compare. Write the colors and fractions in order. Then use symbols ($<$, $>$) to compare the fractions.

\[ \text{red} \quad \text{purple} \quad \text{green} \]

5. Noreen cuts out 3 paper circles to put on the mural. She divides one circle into fourths, one into sixths, and one into eighths. She wants to put glitter on some parts of the paper circles.

   a. Draw circles to show Noreen's work.

   ![Circles with fractions shaded]

   b. Noreen puts the glitter on equivalent parts of all the circles. Shade the 3 circles to show equivalent parts. Then write two pairs of equivalent fractions.

   \[ \frac{3}{6} \]
A Barbeque

The community center is having a barbecue. Many people bring food and games to the barbecue. Use your knowledge of fractions to solve the problems.

1. Zach’s family brings a large sandwich to the picnic. They cut the sandwich into 8 equal parts. Four people each take one piece of the sandwich.
   a. Draw a picture to show the sandwich. Shade the parts that were eaten.

b. Write a fraction to show how much of the sandwich was eaten.
   \[ \frac{4}{8} = \frac{1}{2} \]

c. Draw another sandwich cut into 4 equal parts. Shade the sandwich to show an equivalent fraction to the sandwich Zach’s family brought to the picnic.

d. Then write a pair of equivalent fractions for the sandwiches.  
   \[ \frac{4}{8} = \frac{2}{4} \]

2. Mrs. Lin brings 6 trays of hamburger buns to the picnic. \( \frac{3}{4} \) of the trays have wheat buns.
   a. How many of the buns are wheat buns? Draw a diagram to solve the problem.

   Four trays are wheat.

b. Write a pair of equivalent fractions for the diagram that you drew. Explain why the fractions are equivalent.

   \[ \frac{2}{3} \quad \frac{4}{6} \] The fractions are equivalent because \( \frac{2}{3} \) equals \( \frac{4}{6} \) each other.
   I multiplied the top and bottom by 2.

3. Mr. Sanchez brings a tray of 8 granola bars to the barbeque. The bars are equal-size pieces. Four people share each of the bars equally.
   a. Explain how they could divide all the bars so each person gets the same amount. Draw pictures to show your thinking.

   Everyone gets \( \frac{1}{2} \) bar.
   Everyone starts with 1 and then they cut the remaining \( \frac{1}{2} \) in \( \frac{1}{2} \)
   So everyone gets a \( \frac{1}{2} \) too.

b. Suppose the four people only eat 4 equal-size pieces of granola bars. Compare the number of granola bars that were eaten to the number of bars not eaten. Write a fraction sentence. Use \( >, <, \) or \( = \).

   \[ \frac{4}{8} \bigg\{ \frac{2}{4} \bigg\} \]
4. William and Cassie bring pies to the barbecue. They cut them into different parts and serve them.
   a. The table shows the parts of pie people ate. Shade each pie to show what was eaten. Then write the fraction.

<table>
<thead>
<tr>
<th>three sixths</th>
<th>four eighths</th>
<th>three fourths</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \frac{3}{6} )</td>
<td>( \frac{4}{8} )</td>
<td>( \frac{3}{4} )</td>
</tr>
</tbody>
</table>

   b. Look at the pies you shaded. Which two show equivalent fractions? Write a pair of equivalent fractions.
   \( \frac{3}{6} = \frac{4}{8} \)

   c. Which two fractions have the same numerator? Compare the fractions. Write a sentence using > or <.
   \( \frac{3}{6} \) __\( \frac{3}{4} \) \( \frac{9}{12} \)

   d. Look at the fraction you drew for four-eighths. Write a fraction that is greater. Write a fraction that is less. Then write the fractions in order from least to greatest.
   \( \frac{5}{8} \) is greater. \( \frac{3}{8} \) is least.
   \( \frac{2}{8} < \frac{4}{8} < \frac{5}{8} \)

5. Milos brings 12 hamburgers to the picnic. He puts cheese on 4 hamburgers.
   a. Draw to show the fraction. Write two equivalent fractions. Explain why they are equivalent fractions.
   \( \frac{2}{6} \) \( \frac{4}{12} \) \( \frac{8}{24} \)
   They are equivalent because their double.

   b. Milos says that \( \frac{3}{4} \) of the hamburgers have cheese. Explain why Milos is correct or incorrect.
   Milos is incorrect because half of the cheeseburgers is 6 and there was only 4 cheeseburgers that had cheese on it.

6. There is a track next to the barbecue area. The track is \( \frac{1}{2} \) mile long. A group of students have a relay race. They run back and forth on the track 4 times.
   a. Draw a number line to show how many miles the students ran. Use 0 and \( \frac{1}{2} \) as points on your number line. Divide the number line into equal parts to solve the problem. Then write an equivalent fraction.
   \( \frac{1}{4} \) \( \frac{3}{4} \) \( \frac{7}{4} \) \( \frac{4}{4} = 1 \)

   b. Suppose the students ran the track \( \frac{3}{4} \) more times. Write a fraction to show how many miles they ran.
   \( \frac{12}{4} = 3 \)
   They ran 3 miles.
A Barbeque

The community center is having a barbeque. Many people bring food and games to the barbeque. Use your knowledge of fractions to solve the problems.

1. Zach’s family brings a large sandwich to the picnic. They cut the sandwich into 8 equal parts. Four people each take one piece of the sandwich.
   a. Draw a picture to show the sandwich. Shade the parts that were eaten.

   ![Image of a sandwich with parts shaded]

   b. Write a fraction to show how much of the sandwich was eaten.

   \[\frac{4}{8}\]

   c. Draw another sandwich cut into 4 equal parts. Shade the sandwich to show an equivalent fraction to the sandwich Zach’s family brought to the picnic.

   ![Image of a sandwich with parts shaded]

   d. Then write a pair of equivalent fractions for the sandwiches.

   \[\frac{2}{4} = \frac{1}{2}\]

2. Mrs. Lin brings 6 trays of hamburger buns to the picnic. \(\frac{3}{6}\) of the trays have wheat buns.
   a. How many of the buns are wheat buns? Draw a diagram to solve the problem.

   ![Diagram of a tray with shaded wheat buns]

   b. Write a pair of equivalent fractions for the diagram that you drew. Explain why the fractions are equivalent.

3. Mr. Sanchez brings a tray of 6 granola bars to the barbeque. The bars are equal-size pieces. Four people share each of the bars equally.
   a. Explain how they could divide all the bars so each person gets the same amount. Draw pictures to show your thinking.

   - They could share 4 pieces.
   - They could cut the remaining 2 pieces in half to make 4 more pieces.
   - They can share the remaining 4 pieces.

   ![Diagram of granola bars being divided]

   b. Suppose the four people only eat 4 equal-size pieces of granola bars. Compare the number of granola bars that were eaten with the number of bars not eaten. Write a fraction sentence. Use \(>\), \(<\), or \(=\).

   \[\frac{4}{6} < \frac{4}{6}\]
4. William and Cassie bring pies to the barbecue. They cut them into different parts and serve them.
   a. The table shows the parts of pie people ate. Shade each pie to show what was eaten. Then write the fraction.
      | three sixths | four eighths | three fourths |
      | 1/6          | 1/3          | 3/4           |
   
   b. Look at the pies you shaded. Which two show equivalent fractions? Write a pair of equivalent fractions.
      \( \frac{1}{3} = \frac{2}{3} \)

   c. Which two fractions have the same numerator? Compare the fractions. Write a sentence using > or <.
      \( \frac{3}{6} < \frac{3}{4} \)

   d. Look at the fraction you drew for four-eighths. Write a fraction that is greater. Write a fraction that is less. Then write the fractions in order from least to greatest.
      \( \frac{1}{8}, \frac{1}{8}, \frac{3}{8} \)

5. Milos brings 12 hamburgers to the picnic. He puts cheese on 4 hamburgers.
   a. Draw to show the fraction. Write two equivalent fractions. Explain why they are equivalent fractions.
      \( \frac{1}{3} \) and \( \frac{2}{6} \) are equivalent because they both can be divided by 2.

   b. Milos says that \( \frac{4}{6} \) of the hamburgers have cheese. Explain why Milos is correct or incorrect.
      He is incorrect because \( \frac{4}{6} \) is not equivalent to \( \frac{1}{2} \).

6. There is a track next to the barbecue area. The track is \( \frac{1}{2} \) mile long. A group of students have a relay race. They run back and forth on the track 4 times.
   a. Draw a number line to show how many miles the students ran. Use 0 and 1 as points on your number line. Divide the number line into equal parts to solve the problem. Then write an equivalent fraction.
      \[ \frac{1}{4}, \frac{1}{4}, \frac{1}{4}, \frac{1}{4}, \frac{1}{4} \]
      \[ \frac{1}{4} = \frac{4}{16}, \text{ so students ran 1 mile} \]

   b. Suppose the students ran the track 8 more times. Write a fraction to show how many miles they ran.
      \( \frac{1}{4} \) \( \times \) 8 = 8 miles
**A Barbeque**

The community center is having a barbeque. Many people bring food and games to the barbeque. Use your knowledge of fractions to solve the problems.

1. Zach’s family brings a large sandwich to the picnic. They cut the sandwich into 8 equal parts. Four people each take one piece of the sandwich.
   a. Draw a picture to show the sandwich. Shade the parts that were eaten.
   b. Write a fraction to show how much of the sandwich was eaten.
   c. Draw another sandwich cut into 4 equal parts. Shade the sandwich to show an equivalent fraction to the sandwich Zach’s family brought to the picnic.
   d. Then write a pair of equivalent fractions for the sandwiches.

2. Mrs. Lin brings 6 trays of hamburger buns to the picnic. \( \frac{3}{4} \) of the trays have wheat buns.
   a. How many of the buns are wheat buns? Draw a diagram to solve the problem.
   b. Write a pair of equivalent fractions for the diagram that you drew. Explain why the fractions are equivalent.

3. Mr. Sanchez brings a tray of 6 granola bars to the barbeque. The bars are equal-size pieces. Four people share each of the bars equally.
   a. Explain how they could divide all the bars so each person gets the same amount. Draw pictures to show your thinking.
   b. Suppose the four people only eat 4 equal-size pieces of granola bars. Compare the number of granola bars that were eaten with the number of bars not eaten. Write a fraction sentence. Use >, <, or =.

\[
\frac{1}{2} > \frac{1}{4}
\]
4. William and Cassie bring pies to the barbecue. They cut them into different parts and serve them.
   a. The table shows the parts of pie people ate. Shade each pie to show what was eaten. Then write the fraction.

<table>
<thead>
<tr>
<th>three sixths</th>
<th>four eighths</th>
<th>three fourths</th>
</tr>
</thead>
<tbody>
<tr>
<td>2/6</td>
<td>1/8</td>
<td>3/4</td>
</tr>
</tbody>
</table>

   b. Look at the pies you shaded. Which two show equivalent fractions? Write a pair of equivalent fractions.

   2/6 and 6/12

   c. Which two fractions have the same numerator? Compare the fractions. Write a sentence using > or <.

   3/10 < 3/4

   d. Look at the fraction you drew for four-eighths. Write a fraction that is greater. Write a fraction that is less. Then write the fractions in order from least to greatest.

   3/7 3/8 1/3

5. Milos brings 12 hamburgers to the picnic. He puts cheese on 4 hamburgers.
   a. Draw to show the fraction. Write two equivalent fractions. Explain why they are equivalent fractions.

   [Fraction drawing: 4/12, 1/3, 2/6, 3/6, 4/8, 5/12, 6/12, 7/12, 8/12, 9/12, 10/12, 11/12, 12/12]

   Because you can divide 12 by 2 and 12 by 2

   b. Milos says that 1/3 of the hamburgers have cheese. Explain why Milos is correct or incorrect.

   He is correct because there's only 4.

6. There is a track next to the barbecue area. The track is 1 mile long. A group of students have a relay race. They run back and forth on the track 4 times.
   a. Draw a number line to show how many miles the students ran. Use 0 and 1 as points on your number line. Divide the number line into equal parts to solve the problem. Then write an equivalent fraction.

   [Number line: 0, 1/12, 2/12, 3/12, 4/12, 5/12, 6/12, 7/12, 8/12, 9/12, 10/12, 11/12, 12/12]

   b. Suppose the students ran the track 8 more times. Write a fraction to show how many miles they ran.

   2/8 miles
2. Mrs. Lin brings 6 trays of hamburger buns to the picnic. 3 of the trays have wheat buns.

a. How many of the buns are wheat buns? Draw a diagram to solve the problem.

b. Write a pair of equivalent fractions for the diagram that you drew. Explain why the fractions are equivalent.

3. Mr. Sanchez brings a tray of 6 granola bars to the barbecue. The bars are equal-size pieces. Four people share each of the bars.

a. Explain how they could divide all the bars so each person gets the same amount. Draw pictures to show your thinking.

b. Suppose the four people only eat 4 equal-size pieces of granola bars. Compare the number of granola bars that were eaten with the number of bars not eaten. Write a fraction sentence. Use <, >, or =.

---

**A Barbeque**

The community center is having a barbeque. Many people bring food and games to the barbeque. Use your knowledge of fractions to solve the problems.

1. Zac's family brings a large sandwich to the picnic. They cut the sandwich into 8 equal parts. Four people each take one piece of the sandwich.

a. Draw a picture to show the sandwich. Shade the parts that were eaten.

b. Write a fraction to show how much of the sandwich was eaten.

c. Draw another sandwich cut into 4 equal parts. Shade the sandwich to show an equivalent fraction to the sandwich Zac's family brought to the picnic.

d. Then write a pair of equivalent fractions for the sandwich.
4. William and Cassie bring pies to the barbecue. They cut them into different parts and serve them.
   a. The table shows the parts of pie people ate. Shade each pie to show what was eaten. Then write the fraction.

<table>
<thead>
<tr>
<th>fractions</th>
<th>3/6ths</th>
<th>4/8ths</th>
<th>3/4ths</th>
</tr>
</thead>
<tbody>
<tr>
<td>fractions</td>
<td>1/2</td>
<td>1/3</td>
<td>1</td>
</tr>
</tbody>
</table>

   b. Look at the pies you shaded. Which two show equivalent fractions? Write a pair of equivalent fractions.
   \[
   \frac{1}{2} \text{ and } \frac{2}{4}
   \]

c. Which two fractions have the same numerator? Compare the fractions. Write a sentence using > or <.
   \[
   \frac{2}{3} \text{ and } \frac{4}{6} \text{ have the same numerator.}
   \]

d. Look at the fraction you drew for four-eighths. Write a fraction that is greater. Write a fraction that is less. Then write the fractions in order from least to greatest.
   \[
   \frac{1}{2}, \frac{3}{4}, \frac{5}{8}
   \]

5. Milos brings 12 hamburgers to the picnic. He puts cheese on 4 hamburgers.
   a. Draw a fraction to show the fraction. Write two equivalent fractions. Explain why they are equivalent fractions.
   \[
   \frac{4}{12} \text{ they are equivalent because they both are even.}
   \]
   b. Milos says that \( \frac{2}{3} \) of the hamburgers have cheese. Explain why Milos is correct or incorrect.
   \[
   \text{Milos is incorrect because he said } \frac{2}{3} \text{ is } \frac{4}{6}
   \]

6. There is a track next to the barbecue area. The track is \( \frac{1}{4} \) mile long. A group of students have a relay race. They run back and forth on the track 4 times.
   a. Draw a number line to show how many miles the students ran. Use 0 and 1 as points on your number line. Divide the number line into equal parts to solve the problem. Then write an equivalent fraction.
   \[
   \frac{1}{4} - \frac{2}{4} - \frac{3}{4} - \frac{4}{4}
   \]
   b. Suppose the students ran the track 8 more times. Write a fraction to show how many miles they ran.
   \[
   \frac{8}{4}
   \]
## Chapter 9 Test

<table>
<thead>
<tr>
<th>Item</th>
<th>Lesson</th>
<th>Standard</th>
<th>Content Focus</th>
<th>Intervene With</th>
<th>Personal Math Trainer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 2, 10</td>
<td>9.3</td>
<td>3.NF.A.3d</td>
<td>Compare fractions with the same numerator.</td>
<td>R—9.3</td>
<td>3.NF.3d</td>
</tr>
<tr>
<td>3, 6, 11</td>
<td>9.2</td>
<td>3.NF.A.3d</td>
<td>Compare fractions with the same denominator.</td>
<td>R—9.2</td>
<td>3.NF.3d</td>
</tr>
<tr>
<td>4, 12, 13, 15, 19</td>
<td>9.4</td>
<td>3.NF.A.3d</td>
<td>Compare fractions.</td>
<td>R—9.4</td>
<td>3.NF.3d</td>
</tr>
<tr>
<td>7, 18, 20</td>
<td>9.6</td>
<td>3.NF.A.3a</td>
<td>Use models to find equivalent fractions.</td>
<td>R—9.6</td>
<td>3.NF.3a</td>
</tr>
<tr>
<td>8, 14</td>
<td>9.7</td>
<td>3.NF.A.3b</td>
<td>Name equivalent fractions.</td>
<td>R—9.7</td>
<td>3.NF.3b</td>
</tr>
<tr>
<td>16, 17</td>
<td>9.5</td>
<td>3.NF.A.3d</td>
<td>Compare and order fractions.</td>
<td>R—9.5</td>
<td>3.NF.3d</td>
</tr>
</tbody>
</table>

**Key:** R—Reteach