GRADE 3 • MODULE 5
Fractions as Numbers on the Number Line

Module Overview ..................................................................................................................................................i

Topic A: Partition a Whole into Equal Parts: Identify and Count Unit Fractions as 1 Half, 1 Third, 1 Fourth, etc.; Specify the Whole as 2, 3, and 4 Equal Parts, etc. .................................................................................................................................................. 5.A.1

Topic B: Identify Unit Fractions and Clarify Their Relation to the Whole .................. 5.B.1

Topic C: Compare Unit Fractions and Specify the Whole by Reasoning About Size .................................................................................................................................................. 5.C.1

Topic D: Represent and Compare Fractions on Number Line Diagrams .................. 5.D.1

Topic E: Equivalent Fractions .............................................................................................................................. 5.E.1

Topic F: Compare and Order Fractions and Reason About Their Size ....................... 5.F.1

Module Assessments .............................................................................................................................................. 5.S.1
1. A beaker is considered full when the liquid reaches the fill line shown near the top. Estimate the amount of water in the beaker by shading the drawing as indicated. The first one is done for you.

![Shaded beakers](image)

1 half  
1 fourth  
1 third

2. Juanita cut her string cheese into equal pieces as shown in the rectangles below. In the blanks below, name the fraction of the string cheese represented by the shaded part.

![Shaded rectangles](image)
3. In the space below, draw a small rectangle. Estimate to split it into 2 equal parts. How many lines did you draw to make 2 equal parts? What is the name of each fractional unit?

- Draw another small rectangle. Estimate to split it into 3 equal parts. How many lines did you draw to make 3 equal parts? What is the name of each fractional unit?

- Draw another small rectangle. Estimate to split it into 4 equal parts. How many lines did you draw to make 4 equal parts? What is the name of each fractional unit?

4. Each rectangle represents 1 sheet of paper. Estimate to show how you would cut the paper into fractional units as indicated below.

- What do you notice? How many lines do you think you would draw to make a rectangle with 20 equal parts?

5. Rochelle has a strip of wood 12 inches long. She cuts it into pieces that are each 6 inches in length. What fraction of the wood is one piece? Use your yellow strip from the lesson to help you. Draw a picture to show the piece of wood and how Rochelle cut it.
1. Name the fraction that is shaded

2. Estimate to partition the rectangle into thirds

3. A plumber has 12 feet of pipe. He cuts it into pieces that are each 3 feet in length. What fraction of the pipe would one piece represent? (Use your yellow strip from the lesson to help you.)
1. A beaker is considered full, when the liquid reaches the fill line shown near the top. Estimate the amount of water in the beaker by shading the drawing as indicated. The first one is done for you.

   1 half
   1 fifth
   1 sixth

4. Danielle cut her candy bar into equal pieces as shown in the rectangles below. In the blanks below, name the fraction of candy bar represented by the shaded part.

   [Shaded areas with fractions: one half, one sixth, one fifth]

5. Each circle represents 1 whole pie. Estimate to show how you would cut the pie into fractional units as indicated below.

   [Shaded areas with fractions: halves, thirds, sixths]
6. Each rectangle represents 1 sheet of paper. Estimate to draw lines to show how you would cut the paper into fractional units as indicated below.

![Halves, Fourths, Eighth](image)

7. Each rectangle represents 1 sheet of paper. Estimate to draw lines to show how you would cut the paper into fractional units as indicated below.

![Sixths, Thirds](image)

8. Yuri has a rope 12m long. He cuts it into pieces that are each 2m long. What fraction of the rope is one piece? (Use your yellow strip from the lesson to help you.) Draw a picture.

9. Dawn bought 12 grams of chocolate. She ate half of the chocolate. How many grams of chocolate did she eat?
1. Circle the strips that are folded to make equal parts.

![Diagram of strips]

2. 

   a) There are ______ equal parts in all. ______ are shaded.

   ![Diagram of strips]

   b) There are ______ equal parts in all. ______ are shaded.

   ![Diagram of strips]

   c) There are ______ equal parts in all. ______ are shaded.

   ![Diagram of strips]

   d) There are ______ equal parts in all. ______ are shaded.
For the following problems, use your fraction strips as tools to help you.

3. Noah, Pedro, and Sharon want to share a whole candy bar fairly. Which of your fraction strips shows how they can each get an equal part? Draw the candy bar below. Label to show who gets which part. Label the fraction of the candy bar Sharon gets.

4. To make a small playhouse for his toy truck, Zeno took a rectangular piece of thin cardboard and bent it in half. He then bent each half in half again. Which of your fraction strips matches this story well?

   a. What fraction of the original cardboard is each part? Draw and label the matching fraction strip below.

   b. Zeno took a different piece of cardboard and bent it in thirds. He then bent each third in half again. Which of your fraction strips matches this story well? Draw and label the matching fraction strip in the space below.
1. Circle the model that shows one third.

2. There are ______ equal parts in all. ______ are shaded.

3. Michael bakes a piece of garlic bread for dinner. He shares it equally with his three sisters. Show how Michael and his three sisters can each get an equal share of the garlic bread.
Lesson 2: Specify and Partition a Whole Into Equal Parts, Identifying and Counting Unit Fractions by Folding Fraction Strips

Date: 1/31/13

1. Circle the strips that are cut into equal parts.

   ![Strip 1](image1.png) ![Strip 2](image2.png)

2. a) There are ______ equal parts in all. ______ are shaded.

   ![Strip 3](image3.png)

   b) There are ______ equal parts in all. ______ are shaded.

   ![Strip 4](image4.png)

   c) There are ______ equal parts in all. ______ are shaded.

   ![Strip 5](image5.png)

   d) There are ______ equal parts in all. ______ are shaded.
3. Dylan plans to eat $\frac{1}{5}$ of his candy bar. His 4 friends want him to share the rest equally. Show how Dylan and his friends can each get an equal share of the candy bar.

4. Nasir baked a pie and cut it in fourths. He then took each of the pieces and cut them in half.
   
a. What fraction of the original pie does each piece represent?

   b. Nasir ate one piece of pie on Wednesday and two pieces on Tuesday. What fraction of the original pie was not eaten?
1. Each shape is a whole divided into equal parts. Name the fractional unit and then count and tell how many of those units are shaded. The first one is done for you.

The unit is 1 fourth.

2 fourths are shaded.

2. Circle the shapes that are divided into equal parts. Write a sentence telling what “equal parts” means.

3. Each shape is 1 whole. Estimate to divide each into 4 equal parts. Name the fractional unit below.

---

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4. Each shape is 1 whole. Divide and shade to show a fractional unit of:

- A half
- A sixth
- A third

5. Each shape is 1 whole. Estimate to divide each into equal parts (do not draw fourths). Divide each whole using a different fractional unit. Write the name of the fractional unit on the line below the shape.

6. Charlotte wanted to equally share a candy bar with her 4 other friends. Draw Charlotte’s candy bar. Show how she can divide her candy bar so that Charlotte and her 4 friends each get an equal share. What fraction of the candy bar does each girl receive?

Each girl receives _______________________.
Name ___________________________________________ Date ___________________

1. ____________ sevenths are shaded.

2. Circle the shapes that are divided into equal parts.

   [Diagrams of pentagon, circle, and hexagon with lines dividing them into equal parts]

3. Steven wants to equally share his pizza with his 3 sisters. What fraction of the pizza do he and each sister receive?

   He and each sister receive ________________.
1. Each shape is a whole divided into equal parts. Name the fractional unit and then count and tell how many of those units are shaded. The first one is done for you.

   The unit is 1 fourth.
   2 fourths are shaded.

2. Each shape is 1 whole. Estimate to divide each into equal parts. Divide each whole using a different fractional unit. Write the name of the fractional unit on the line below the shape.

3. An artist wants to draw a calendar on one sheet of paper to show each month of the year. Draw the artist’s calendar. Show how he can divide his calendar so that each month is given the same space. What fraction of the calendar bar does each month receive?

   Each month receives _________________________.
Name ________________________________  Date __________________

A. Draw a picture of the yellow strip at 3 (or 4) different stations. Shade and label one fractional unit of each.

B. Draw a picture of the brown bar at 3 (or 4) different stations. Shade and label one fractional unit of each.

C. Draw a picture of the square at 3 (or 4) different stations. Shade and label one fractional unit of each.
D. Draw a picture of the clay at 3 (or 4) different stations. Shade and label one fractional unit of each.

E. Draw a picture of the water at 3 (or 4) different stations. Shade and label one fractional unit of each.

F. Challenge: Draw a picture of the yarn at 3 (or 4) different stations.
Lesson 4 Exit Ticket

Each shape is 1 whole. Estimate to equally partition the image to show the fractional unit of:

1. \( \frac{1}{4} \)

2. \( \frac{1}{5} \)

3. The shape represents 1 whole. Write the fractional unit of the shaded part.

The shaded part is _______
Name ________________________________ Date __________________

Each shape is 1 whole. Estimate to equally partition the following images to show the fractional unit of:

1. \( \frac{1}{2} \)
   - A
   - B
   - C
   - D

2. \( \frac{1}{4} \)
   - A
   - B
   - C
   - D

3. \( \frac{1}{3} \)
   - A
   - B
   - C
   - D
4. Each of the shapes represent 1 whole. Match each shape to its unit fraction.

\[
\begin{align*}
\frac{1}{3} & \quad \frac{1}{4} & \quad \frac{1}{2} & \quad \frac{1}{8} & \quad \frac{1}{10} \\
\frac{1}{12} & \quad \frac{1}{5} & & & \quad \frac{1}{6}
\end{align*}
\]
1. Fill in the chart. Then whisper the fractional unit.

<table>
<thead>
<tr>
<th></th>
<th>Total Number of Equal Parts</th>
<th>Total Number of Equal Parts Shaded</th>
<th>Unit Form</th>
<th>Fraction</th>
</tr>
</thead>
<tbody>
<tr>
<td>a)</td>
<td><img src="triangle.png" alt="Diagram" /></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b)</td>
<td><img src="rectangle.png" alt="Diagram" /></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c)</td>
<td><img src="square.png" alt="Diagram" /></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d)</td>
<td><img src="rectangle.png" alt="Diagram" /></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e)</td>
<td><img src="rectangle.png" alt="Diagram" /></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>f)</td>
<td><img src="rectangle.png" alt="Diagram" /></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2. Andre’s mom baked his 2 favorite cakes for his birthday party. The cakes were the exact same size. Andre cut his first cake into 8 pieces for him and his 7 friends. The picture below shows how he cut it. Did Andre cut the cake into eighths? Explain your answer.

![Diagram of a cake cut into 8 pieces]

3. Two of Andre’s friends came late to his party. They decide they will all share the second cake. Show how Andre can slice the second cake so that he and his nine friends can each get an equal amount with none leftover. What fraction of the second cake will they each receive?

![Diagram of a cake]

4. Andre thinks it’s strange that \( \frac{1}{10} \) of the cake would be less than \( \frac{1}{8} \) of the cake, since ten is bigger than eight. To explain to Andre, draw 2 identical rectangles to stand for the cakes. Show 1 tenth shaded on one and 1 eighth shaded on the other. Label the unit fractions and show him which slice is bigger.
Lesson 5 Exit Ticket

Name _________________________________ Date __________________

1. Fill in the chart.

<table>
<thead>
<tr>
<th></th>
<th>Total Number of Equal Parts</th>
<th>Total Number of Equal Parts Shaded</th>
<th>Word Form</th>
<th>Fraction</th>
</tr>
</thead>
<tbody>
<tr>
<td>a)</td>
<td><img src="image1" alt="Diagram" /></td>
<td><img src="image2" alt="Diagram" /></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Each image below is 1 whole. Write the fraction that is shaded.

   ![Diagram](image3)    ![Diagram](image4)    ![Diagram](image5)

   __________________  __________________  __________________

3. Draw two rectangles. Partition one into 5 equal parts. Partition the other into 8 equal parts. Label the unit fractions and shade 1 equal part in each rectangle. Use your drawing to explain why \( \frac{1}{5} \) is larger than \( \frac{1}{8} \).
1. Fill in the chart. Then whisper the fraction.

<table>
<thead>
<tr>
<th></th>
<th>Total Number of Equal Parts</th>
<th>Total Number of Equal Parts Shaded</th>
<th>Word Form</th>
<th>Fraction</th>
</tr>
</thead>
<tbody>
<tr>
<td>a)</td>
<td><img src="image1" alt="Diagram" /></td>
<td><img src="image2" alt="Diagram" /></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b)</td>
<td><img src="image3" alt="Diagram" /></td>
<td><img src="image4" alt="Diagram" /></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c)</td>
<td><img src="image5" alt="Diagram" /></td>
<td><img src="image6" alt="Diagram" /></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d)</td>
<td><img src="image7" alt="Diagram" /></td>
<td><img src="image8" alt="Diagram" /></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e)</td>
<td><img src="image9" alt="Diagram" /></td>
<td><img src="image10" alt="Diagram" /></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2. This figure is divided into six parts. Are they sixths? Explain your answer.

3. Terry and his 3 friends baked a pizza during his sleepover. They want to share the pizza equally. Show how Terry can slice the pizza so that he and his 3 friends can each get an equal amount with none leftover.

4. Draw two identical rectangles. Shade 1 seventh of one rectangle and 1 tenth of the other. Label the unit fractions. Use your rectangles to explain why $\frac{1}{7}$ is greater than $\frac{1}{10}$. 
1. Complete the number sentence. Estimate to equally partition each strip and shade the answer.

   Sample:
   \[
   \frac{2}{3} \text{ thirds} = \frac{2}{3}
   \]

   a. \(\frac{3}{4}\) fourths =

   b. \(\frac{3}{7}\) sevenths =

   c. \(\frac{4}{5}\) fifths =

   d. \(\frac{2}{6}\) sixths =

2. Mr. Stevens bought 8 liters of soda for a party. His friends drank 1 liter.

   a. What fraction of the soda did his guests drink?

   b. What fraction of the soda was left?
Lesson 6 Worksheet

3. Fill in the chart. Whisper the total number of fractional units.

<table>
<thead>
<tr>
<th>Sample:</th>
<th>Total Number of Equal Parts</th>
<th>Total Number of Shaded Equal Parts</th>
<th>Unit Fraction</th>
<th>Fraction Shaded</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4</td>
<td>3</td>
<td>( \frac{1}{4} )</td>
<td>( \frac{3}{4} )</td>
</tr>
</tbody>
</table>

a) ![Diagram](image1)

b) ![Diagram](image2)

c) ![Diagram](image3)

d) ![Diagram](image4)

e) ![Diagram](image5)
Estimate to equally partition the strip and shade the answer. Write the unit fraction inside each shaded unit.

2 fifths =

1. a. What fraction of the circle is shaded?

b. What fraction of the circle is not shaded?

2. Complete the chart.

<table>
<thead>
<tr>
<th>Total Number of Equal Parts</th>
<th>Total Number of Shaded Equal Parts</th>
<th>Unit Fraction</th>
<th>Fraction Shaded</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1. Complete the number sentence. Estimate to equally partition each strip and shade the answer.

Sample:

\[
\frac{3}{4} \quad \frac{1}{4} \quad \frac{1}{4} \quad \frac{1}{4}
\]

3 fourths = \(\frac{3}{4}\)

a. 2 thirds =

b. 5 sevenths =

c. 3 fifths =

d. 2 eighths =

2. Mr. Abney bought 6 kg of rice. He cooked 1 kg of it for dinner.

a. What fraction of the rice did he cook for dinner?

b. What fraction of the rice was left?
3. Fill in the chart.

<table>
<thead>
<tr>
<th>Sample:</th>
<th>Total Number of Equal Parts</th>
<th>Total Number of Shaded Equal Parts</th>
<th>Unit Fraction</th>
<th>Fraction Shaded</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Sample" /></td>
<td>6</td>
<td>5</td>
<td>$\frac{1}{6}$</td>
<td>$\frac{5}{6}$</td>
</tr>
</tbody>
</table>

a) ![Diagram a](image)

b) ![Diagram b](image)

c) ![Diagram c](image)

d) ![Diagram d](image)
Lesson 7: Identify and Represent Shaded and Non-Shaded Parts of One Whole as Fractions

Name ___________________________________________ Date ________________

Whisper the fraction of the shape that is shaded. Then match the shape to the amount that is not shaded.

1. • 2 thirds
2. • 6 sevenths
3. • 4 fifths
4. • 8 ninths
5. • 1 half
6. • 5 sixths
7. • 7 eighths
8. • 3 fourths
9. a) How many eighths are in 1 whole? __________________

b) How many ninths are in 1 whole? __________________

c) How many twelfths are in 1 whole? __________________

10. Each strip represents 1 whole. Write a fraction to label the shaded and un-shaded parts.

![Diagram of three strips of paper with shaded and un-shaded parts labeled with fractions.]

11. Avanti read 1 sixth of her book. What fraction of the book has she not read yet?
1. Write the fraction that is not shaded.

2. There are ________ sixths in 1 whole.

3. The fraction strip is 1 whole. Write fractions to label the shaded and un-shaded parts.

4. Justin mows part of his lawn. Then his lawnmower runs out of gas. He has not mowed $\frac{9}{10}$. What part of his lawn is mowed?
Whisper the fraction of the shape that is shaded. Then match the shape to the amount that is not shaded.

1. \[ \frac{3}{5} \] • 9 tenths

2. \[ \frac{2}{5} \] • 4 fifths

3. \[ \frac{5}{11} \] • 10 elevenths

4. \[ \frac{3}{5} \] • 5 sixths

5. \[ \frac{5}{10} \] • 1 half

6. \[ \frac{2}{3} \] • 2 thirds

7. \[ \frac{3}{4} \] • 3 fourths
9. Each strip represents 1 whole. Write a fraction to label the shaded and un-shaded parts.

10. Carla finished 1 fourth of her homework on Saturday. What fraction of her homework has she not finished? Draw and explain.

Show a number bond representing what is shaded and unshaded in each of the figures. Draw a different visual model that would be represented by the same number bond.

Sample:

1. 

2. 

3. 

4. 

5. 

5. Draw a number bond with 2 parts showing the shaded and unshaded fractions of each figure. Decompose both parts of the number bond into unit fractions.

6. The chef put $\frac{3}{4}$ of the meat on the grill to make one burger and put the rest in the refrigerator. Draw a 2-part number bond showing the fraction of the meat on the grill and the fraction in the refrigerator. Draw a visual model of all the meat. Shade what is in the refrigerator.

   a. What fraction of the meat was in the refrigerator?

   b. How many other such burgers can the chef make from what is in the refrigerator?

   c. Show the refrigerated meat broken into unit fractions on your number bond.
1. Draw a number bond that shows the shaded and the unshaded parts of the shape below. Then show each part decomposed into unit fractions.

2. Complete the number bond. Draw a shape that has shaded and unshaded parts that match the completed number bond.

\[
\begin{array}{c}
1 \\
\frac{2}{7}
\end{array}
\]
Show a number bond representing what is shaded and unshaded in each of the figures. Draw a different visual model that would be represented by the same number bond.

Sample:

1. 

2. 

3. 

4. 

5. Draw a number bond with 2 parts showing the shaded and unshaded fractions of each figure. Decompose both parts of the number bond into unit fractions.

6. Johnny made a square peanut butter and jelly sandwich. He ate \( \frac{1}{3} \) of it and left the rest on his plate. Draw a picture of Johnny’s sandwich. Shade the part he left on his plate then draw a number bond that matches what you drew. What part of his sandwich did Johnny leave on his plate?
Name ________________________________

1. Each figure represents 1 whole. Fill in the chart.

<table>
<thead>
<tr>
<th>Unit Fraction</th>
<th>Total Number of Units Shaded</th>
<th>Fraction Shaded</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Sample:</td>
<td><img src="image1" alt="Sample Image" /></td>
<td>1/2</td>
</tr>
<tr>
<td>b)</td>
<td><img src="image2" alt="Image" /></td>
<td></td>
</tr>
<tr>
<td>c)</td>
<td><img src="image3" alt="Image" /></td>
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<tr>
<td>d)</td>
<td><img src="image4" alt="Image" /></td>
<td></td>
</tr>
<tr>
<td>e)</td>
<td><img src="image5" alt="Image" /></td>
<td></td>
</tr>
<tr>
<td>f)</td>
<td><img src="image6" alt="Image" /></td>
<td></td>
</tr>
</tbody>
</table>
2. Estimate to draw and shade units on the fraction strips. Solve.

Sample:

5 thirds = \(\frac{5}{3}\)

\[
\begin{array}{cccc}
\frac{1}{3} & \frac{1}{3} & \frac{1}{3} & \frac{1}{3} \\
\end{array}
\]

a. 8 sixths =

\[
\begin{array}{ccc}
\frac{1}{6} & \frac{1}{6} & \frac{1}{6} \\
\end{array}
\]

b. 7 fourths =

\[
\begin{array}{ccc}
\frac{1}{4} & \frac{1}{4} & \frac{1}{4} \\
\end{array}
\]

c. ______________________ = \(\frac{6}{5}\)

\[
\begin{array}{ccc}
\frac{1}{5} & \frac{1}{5} & \frac{1}{5} \\
\end{array}
\]

d. ______________________ = \(\frac{5}{2}\)

\[
\begin{array}{ccc}
\frac{1}{2} & \frac{1}{2} & \frac{1}{2} \\
\end{array}
\]
3. Mrs. Jawlik baked 2 pans of brownies. Draw the pans and estimate to partition each pan into 8 equal pieces.

   a. Mrs. Jawlik’s children gobble up 10 pieces. Shade the amount that was eaten.

   b. Write a fraction to show how many pans of brownies her children ate.
1. Each shape represents 1 whole. Fill in the chart.

<table>
<thead>
<tr>
<th>Fractional Unit</th>
<th>Total Number of Units Shaded</th>
<th>Fraction Shaded</th>
</tr>
</thead>
</table>

2. Estimate to draw and shade units on the fraction strips. Solve.

   a. \( \frac{4}{3} \) =

   b. \( \frac{13}{4} \) =
1. Each shape represents 1 whole. Fill in the chart.

<table>
<thead>
<tr>
<th>Fractional Unit</th>
<th>Total Number of Units Shaded</th>
<th>Fraction Shaded</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Sample:</td>
<td>1/2</td>
<td>3</td>
</tr>
<tr>
<td>b)</td>
<td>1/4</td>
<td></td>
</tr>
<tr>
<td>c)</td>
<td>1/3</td>
<td></td>
</tr>
<tr>
<td>d)</td>
<td>1/5</td>
<td></td>
</tr>
<tr>
<td>e)</td>
<td>1/6</td>
<td></td>
</tr>
<tr>
<td>f)</td>
<td>1/7</td>
<td></td>
</tr>
</tbody>
</table>
2. Estimate to draw and shade units on the fraction strips. Solve.

Sample:

7 fourths = \( \frac{7}{4} \)

\[
\begin{array}{cccc}
\frac{1}{4} & \frac{1}{4} & \frac{1}{4} & \frac{1}{4} \\
\frac{1}{4} & \frac{1}{4} & \frac{1}{4} & \frac{1}{4}
\end{array}
\]

a. 5 thirds =

\[
\begin{array}{c}
\hline
\hline
\hline
\hline
\end{array}
\]

b. \( \frac{10}{3} \)

\[
\begin{array}{cccc}
\hline
\hline
\hline
\hline
\end{array}
\]

3. Reggie bought 2 candy bars. Draw the candy bars and estimate to partition each bar into 4 equal pieces.

a. Reggie ate 5 pieces. Shade the amount that was eaten.

b. Write a fraction to show how many pieces of the candy bar Reggie ate.
1. Each fraction strip is 1 whole. All the fraction strips are equal in length. Color one fractional unit in each strip. Then answer the questions below.

   \[
   \begin{array}{c}
   \frac{1}{2} \\
   \frac{1}{4} \\
   \frac{1}{8} \\
   \frac{1}{3} \\
   \frac{1}{6}
   \end{array}
   \]

2. Circle less than or greater than. Whisper the complete sentence.

   a. \(\frac{1}{2}\) is greater than \(\frac{1}{4}\)
   b. \(\frac{1}{6}\) is greater than \(\frac{1}{2}\)
   c. \(\frac{1}{3}\) is greater than \(\frac{1}{2}\)
   d. \(\frac{1}{3}\) is greater than \(\frac{1}{6}\)
   e. \(\frac{1}{8}\) is greater than \(\frac{1}{6}\)
   f. \(\frac{1}{8}\) is greater than \(\frac{1}{4}\)
Lesson 10 Worksheet

Lesson 10: Compare Unit Fractions by Reasoning About Their Size Using Fraction Strips

Date: 2/2/13

5.C.11

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3. Lily needs \( \frac{1}{3} \) cup of oil and \( \frac{1}{4} \) cup of water to make muffins. Will Lily use more oil or more water? Draw and estimate to partition the cups of oil and water to explain your answer.

4. Compare unit fractions and write >, < or =.
   a. \( \frac{1}{3} \) \( \bigcirc \) \( \frac{1}{5} \)
   b. \( \frac{1}{7} \) \( \bigcirc \) \( \frac{1}{4} \)
   c. \( \frac{1}{6} \) \( \bigcirc \) \( \frac{1}{6} \)
   d. \( \frac{1}{10} \) \( \bigcirc \) \( \frac{1}{12} \)
   e. \( \frac{1}{16} \) \( \bigcirc \) \( \frac{1}{11} \)
   f. \( \frac{1}{2} \) \( \bigcirc \) \( \frac{1}{2} \)

Bonus:
   g. \( \frac{1}{8} \) \( \bigcirc \) \( \frac{1}{6} \) \( \bigcirc \) \( \frac{1}{3} \) \( \bigcirc \) \( \frac{1}{2} \) \( \bigcirc \) \( \frac{1}{2} \) \( \bigcirc \) \( \frac{1}{2} \)
5. Your friend Eric says that \( \frac{1}{6} \) is greater than \( \frac{1}{5} \) because 6 is greater than 5. Is Eric correct?

Use words and pictures to explain what happens to the size of a unit fraction when the number of parts gets larger.
Name ___________________________________ Date ________________

1. Each fraction strip is 1 whole. All the fraction strips are equal in length. Color one fractional unit in each strip. Then, circle the largest fraction and draw a star to the right of the smallest fraction.

2. Compare unit fractions and write >, < or =.
   a. 1 eighth 〇 1 tenth
   b. 1 whole 〇 5 fifths
   c. \( \frac{1}{7} \) 〇 \( \frac{1}{6} \)
1. Each fraction strip is 1 whole. All the fraction strips are equal in length. Color one fractional unit in each strip. Then answer the questions below.

   \[ \frac{1}{2} \]  
   \[ \frac{1}{3} \]  
   \[ \frac{1}{5} \]  
   \[ \frac{1}{4} \]  
   \[ \frac{1}{9} \]  

2. Circle less than or greater than. Whisper the complete sentence.

   a. \( \frac{1}{2} \) is less than \( \frac{1}{3} \) greater than
   b. \( \frac{1}{9} \) is less than \( \frac{1}{2} \) greater than
   c. \( \frac{1}{4} \) is less than \( \frac{1}{2} \) greater than
   d. \( \frac{1}{4} \) is less than \( \frac{1}{9} \) greater than
   e. \( \frac{1}{5} \) is less than \( \frac{1}{3} \) greater than
   f. \( \frac{1}{5} \) is less than \( \frac{1}{4} \) greater than
Lesson 10 Homework

NYS COMMON CORE MATHEMATICS CURRICULUM

Lesson 10: Compare Unit Fractions by Reasoning About Their Size Using Fraction Strips

Date: 2/2/13

5.C.15

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1. Compare unit fractions and write >, <, or =.

   a. 1 fourth     ○     1 eighth
   b. 1 seventh    ○     1 fifth
   c. 1 eighth     ○     1/8
   d. 1 twelfth    ○     1/10
   e. 1/15         ○     1 thirteenth
   f. 3 thirds     ○     1 whole

3. After his football game, Malik drinks $\frac{1}{2}$ liter of water and $\frac{1}{3}$ liter of juice. Did Malik drink more water or juice? Draw and estimate to partition. Explain your answer.

4. Write a word problem using comparing fractions for your friends to solve. Be sure to show the solution so that your friends can check their work.
Label the unit fraction. In each blank, draw and label the same whole with a shaded unit fraction that makes the sentence true. There is more than 1 correct way to make the sentence true.

<table>
<thead>
<tr>
<th>Sample:</th>
<th></th>
<th></th>
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<tbody>
<tr>
<td>( \frac{1}{4} ) is less than ( \frac{1}{2} )</td>
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<td></td>
</tr>
</tbody>
</table>

1. \( \quad \) is greater than \( \quad \)

2. \( \quad \) is less than \( \quad \)

3. \( \quad \) is greater than \( \quad \)

4. \( \quad \) is less than \( \quad \)
Lesson 11 Worksheet

5. is greater than

6. is less than

7. is greater than

8. Fill in the blank with a fraction to make the statement true and draw a matching model.

\[
\begin{array}{|c|c|}
\hline
\frac{1}{4} & \text{is less than} \\
\hline
\frac{1}{2} & \text{is greater than} \\
\hline
\end{array}
\]
9. Robert ate $\frac{1}{2}$ of a small pizza. Elizabeth ate $\frac{1}{4}$ of a large pizza. Elizabeth says, “My piece was bigger than yours, so that means $\frac{1}{4} > \frac{1}{2}$.” Is Elizabeth correct? Use words and pictures to explain your answer.

10. Manny and Daniel each ate $\frac{1}{2}$ of their candies, shown below. Manny said he ate more candy than Daniel because his half is longer. Is he right? Explain.
Lesson 11 Exit Ticket

Name ___________________________________________ Date _______________________

1. Fill in the blank with a fraction to make the statement true and draw a matching model.

\[
\frac{1}{7} \text{ is less than } \_
\]

\[
\frac{1}{4} \text{ is greater than } \_
\]

2. Tatiana ate \(\frac{1}{2}\) of a small carrot. Louis ate \(\frac{1}{4}\) of a large carrot. Who ate more carrot? Use words and pictures to explain your answer.

\[\frac{1}{2} \text{ is greater than } \frac{1}{4}\]
Label the unit fraction. In each blank draw and label the same whole with a shaded unit fraction that makes the sentence true. There is more than 1 correct way to make the sentence true.

Sample:

<table>
<thead>
<tr>
<th>Fraction</th>
<th>Label</th>
<th>Fraction</th>
<th>Label</th>
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<tbody>
<tr>
<td>1/3</td>
<td>is less than</td>
<td>1/2</td>
<td></td>
</tr>
</tbody>
</table>

1. is greater than

2. is less than

3. is greater than

4. is less than
5. \( \frac{1}{4} \) is greater than \( \triangle \)

6. \( \frac{1}{3} \) is less than \( \square \)

7. \( \frac{1}{5} \) is greater than \( \square \)

8. Fill in the blank with a fraction to make the statement true and draw a matching model.

\[
\frac{1}{6} \quad \text{is greater than} \quad \square \\
\frac{1}{5} \quad \text{is less than} \quad \square \\
\frac{1}{3} \quad \text{is less than} \quad \square \\
\frac{1}{2} \quad \text{is greater than} \quad \square 
\]
9. Debbie ate $\frac{1}{8}$ of a large brownie. Julian ate $\frac{1}{2}$ of a small brownie. Julian says, “I ate more brownies than you because $\frac{1}{2} > \frac{1}{8}$.”

a. Use pictures and words to explain Julian’s mistake.

b. How could you change the problem so that Julian is correct? Use pictures and words to explain.
For each of the following:

- Draw a picture of the designated unit fraction copied to make at least two different wholes.
- Label the unit fractions.
- Label the whole as 1.
- Draw at least one number bond that matches a drawing.

1. Yellow strip

2. Brown strip
3. Orange square

4. Yarn

5. Water

6. Clay
Each shape represents the unit fraction. Draw a possible picture representing 1 whole.

1. \[
\frac{1}{7}
\]

2. \[
\frac{1}{9}
\]

3. Aileen and Jack used the same triangle representing the unit fraction \( \frac{1}{4} \) to create 1 whole. Who did it correctly? Explain.

Aileen's drawing

Jack's drawing
Each shape represents the given unit fraction. Estimate to draw the whole.

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

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

3. 1 third

4. 1 fourth
Each shape represents the given unit fraction. Estimate to draw the corresponding whole, label the unit fractions, then write a number bond that matches the drawing. The first one is done for you.

5. $\frac{1}{3}$

6. $\frac{1}{2}$

7. $\frac{1}{5}$

8. $\frac{1}{7}$
9. Evan and Yong used this shape , representing the unit fraction \( \frac{1}{3} \), to draw 1 whole. Shania thinks both of them did it correctly. Do you agree with her? Explain.
The shape represents 1 whole. Write a unit fraction to describe the shaded part.

1A.

The shaded part represents 1 whole. Divide 1 whole to show the same unit fraction you wrote in A.

B.

2A.

B.

3A.

B.

4A.

B.

5A.
6. Use the diagram below to complete the following statements.

Rope A

Rope B

Rope C

| a. Rope ___________ is $\frac{1}{2}$ the length of Rope B. |
| b. Rope ___________ is $\frac{1}{2}$ the length of Rope A. |
| c. Rope B is $\frac{1}{2}$ the length of Rope ___________. |
| d. Rope C is $\frac{1}{4}$ the length of Rope ___________. |
| e. If Rope B measures 1m long, then Rope A is ___________ m long and Rope C is ___________ m long. |
| f. If Rope A measures 1m long, Rope B is ___________ m long and Rope C is ___________ m long. |

7. Ms. Fan drew the figure below on the board. She asked the class to name the shaded fraction. Charlie answered $\frac{3}{4}$. Janice answered $\frac{3}{2}$. Jenna thinks they’re both right. With whom do you agree? Explain your thinking.

| a. Rope ___________ is $\frac{1}{2}$ the length of Rope B. |
| b. Rope ___________ is $\frac{1}{2}$ the length of Rope A. |
| c. Rope B is $\frac{1}{2}$ the length of Rope ___________. |
| d. Rope C is $\frac{1}{4}$ the length of Rope ___________. |
| e. If Rope B measures 1m long, then Rope A is ___________ m long and Rope C is ___________ m long. |
| f. If Rope A measures 1m long, Rope B is ___________ m long and Rope C is ___________ m long. |
Ms. Silverstein asked the class to draw a model showing $\frac{2}{3}$ shaded. Karol and Deb drew the models below. Which is correct? Explain how you know.

Karol’s  

Deb’s
The shape represents 1 whole. Write a fraction to describe the shaded part.

1A.

The shaded part represents 1 whole. Divide 1 whole to show the same unit fraction you wrote in A.

1B.

2A.

2B.

3A.

3B.

4A.

4B.
5. Use the pictures below to complete the following statements.

Towel Rack A

Towel Rack B

Towel Rack C

a. ____________ is about \( \frac{1}{2} \) the length of Towel Rack C.

b. ____________ is about \( \frac{1}{3} \) the length of Towel Rack C.

c. If Towel Rack C measures 6 ft long, then Towel Rack B is about ____________ ft long and Towel Rack A is about ____________ ft long.

d. About how many copies of Towel Rack A equal the length of Towel Rack C? Write number bonds to help you.

e. About how many copies of Towel Rack B equal the length of Towel Rack C? Write out number bonds to help you.
6. Draw 4 strings, A, B, C, and D by following the directions below. String A is already done for you.

- String B is $\frac{1}{3}$ of String A.
- String C is $\frac{1}{2}$ of String B.
- String D is $\frac{1}{3}$ of String C.

BONUS: String E is 5 times the length of String D.

String A: 

[Drawing of string A]
1. Write number bonds. Partition the fraction strip to show the unit fractions of the number bond. Use the fraction strip to help you label the unit fractions on the number line. Include 0 unit fractions.

Halves

Thirds

Fourths

Fifths
2. Trevor needs to let his puppy outside every quarter (1 fourth) hour to potty train him. Draw and label a number line from 0 hours to 1 hour to show every 1 fourth hour. Include 0 fourths and 4 fourths hour. Label 0 hours and 1 hour, too.

3. A ribbon is one meter long. Mrs. Lee wants to sew a bead every $\frac{1}{5}$ m. The first bead is at $\frac{1}{5}$ m. The last bead is at the 1 m. Draw and label a number line from 0 m to 1 m to show where Mrs. Lee will sew in a bead. Label all the fractions including 0 fifths and 5 fifths. Label 0 meters and 1 meter, too.
1. Write a number bond. Partition the fraction strip and draw and label the fractional units on the number line. Be sure to label 0 unit fractions.

```
Sixths

1

0   1
```

Write number bonds and draw a number line to help explain problem 2.

2. Ms. Metcalf wants to share $1 equally between 5 students.

   a. What fraction of a dollar will each student get?

   b. How much money will each student get?
1. Write number bonds. Partition the fraction strip to show the unit fractions of the number bond. Use the fraction strip to help you label the unit fractions on the number line. Include 0 unit fractions.

Sample:

a. Halves

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

b. Eighths

\[ \frac{1}{8} \]

c. Fifths

\[ \frac{1}{5} \]
2. Carter needs to wrap 6 presents. He lays the ribbon out flat and says, “If I make 6 equally spaced cuts, I’ll have just enough pieces. I can use 1 piece for each package, and I won’t have any pieces left over.” Does he have enough pieces to wrap all the presents?

3. Mrs. Rivera is planting flowers in her 1 meter long rectangular plant box. She divides the plant box into sections \( \frac{1}{9} \text{ m} \) in length, and plants 1 seed in each section. Draw and label a fraction strip representing the plant box from 0m to 1m. Represent each section where Mrs. Rivera will plant a seed. Label all the fractions.

   a. How many seeds will she be able to plant in 1 plant box?

   b. How many seeds will she be able to plant in 4 plant boxes?

   c. Draw a number line below your fraction strip and mark all the fractions.
1. Estimate to label the fractions on the number line from 0 to 1. Make a number bond for each one to the right. This time, the fractions are written above the number line.

- \( \frac{2}{3} \)
- \( \frac{3}{4} \)
- \( \frac{3}{5} \)
- \( \frac{5}{6} \)
- \( \frac{3}{10} \)
2. Draw a number line. Use a fraction strip to locate 0 and 1. Fold the strip to make 8 equal parts. Use the strip to measure and label your number line with 8 unit fractions.

Count up from 0 eighths to 8 eighths on your number line. Touch each number with your finger as you count.

3. For his boat, James stretched out a rope with 5 equally spaced knots as shown.

   ![Diagram of a rope with 5 knots]

   a. Starting at the first knot and ending at the last knot, how many equal parts are formed by the 5 knots? Label each unit fraction at the knot.

   b. What fraction of the rope is labeled at the third knot?

   c. What if the rope had 6 equally spaced knots along the same length? What fraction of the rope would be measured by the first 2 knots?
Lesson 15 Exit Ticket

Name _______________________________  Date __________________

1. Estimate to label the fraction on the number line from 0 to 1. Draw a number bond to match your number line.

   \[ \frac{3}{5} \]

   \[ 0 \]

   \[ 1 \]

   a. \[ \frac{3}{5} \]

2. Partition the number line. Then place each fraction on the number line: \( \frac{3}{6}, \frac{1}{6}, \frac{5}{6} \)

   \[ 0 \]

   \[ 1 \]
1. Estimate to label the fractions on the number line from 0 to 1. The first one is done for you. Draw a number bond to match.

a) \( \frac{1}{3} \)  

b) \( \frac{3}{6} \)  

c) \( \frac{2}{5} \)  

d) \( \frac{7}{10} \)  

e) \( \frac{3}{7} \)
2. Henry has 2 quarters. Ben has 9 dimes. Tina has 2 dimes.
   a. Write the value of each person’s money as a fraction of a dollar:
      
      Henry:
      
      Ben:
      
      Tina:
      
   b. Estimate to place each fraction on the number line.

   ![Number line]

   0 $1

3. Draw a number line. Use a fraction strip to locate 0 and 1. Fold the strip to make 8 equal parts.
   a. Use the strip to measure and label your number line with 8 unit fractions.
   
      b. Count up from 0 sevenths to 8 eighths on your number line. Touch each number with your finger as you count. Write the number bonds that matches the drawing.
1. Estimate to equally partition and label the unit fractions on the number line. Label the wholes as fractions and box them. The first one is done for you.

```
\[ \frac{1}{2} \quad \frac{1}{2} \quad \frac{2}{2} \quad \frac{3}{2} \quad \frac{4}{2} \]

\[ 0 \quad 1 \quad 2 \]
```

```
\[ \frac{1}{3} \quad \frac{1}{3} \quad \frac{1}{3} \quad \frac{1}{3} \]

\[ 1 \quad 2 \]
```

```
\[ \frac{1}{2} \quad \frac{1}{2} \quad \frac{1}{2} \quad \frac{1}{2} \]

\[ 2 \quad 3 \quad 4 \]
```

```
\[ \frac{1}{4} \quad \frac{1}{4} \quad \frac{1}{4} \quad \frac{1}{4} \]

\[ 3 \quad 5 \]
```

```
\[ \frac{1}{3} \quad \frac{1}{3} \quad \frac{1}{3} \quad \frac{1}{3} \]

\[ 6 \quad 9 \]
```
2. Partition each whole into 5 unit fractions. Label each fraction. Count up as you go. Box the whole numbers. Box the fractions that are located at the same points as whole numbers.

3. Partition each whole into 3 unit fractions. Label each fraction. Count up as you go. Box the fractions that are located at the same points as whole numbers.

4. Draw a number line with endpoints 0 and 3. Label the wholes. Partition each whole into 4 unit fractions. Label all the fractions from 0 to 3. Use a separate paper if you need more space.
Name ________________________________ Date ________________

1. Estimate to equally partition and label the unit fractions on the number line. Label the wholes as fractions and box them.

\[\frac{1}{5}\]  \hspace{1cm} 2 \hspace{1cm} 3

2. Draw a number line with endpoints 0 and 2. Label the wholes. Estimate to partition each whole into 6 unit fractions and label them.
Name ____________________________________________ Date ________________

1. Estimate to equally partition and label the fractional units on the number line. Label the wholes as fractions and box them. The first one is done for you.

   a. \( \frac{1}{3} \)

   \[
   \begin{array}{cccccc}
   \frac{3}{3} & \frac{4}{3} & \frac{5}{3} & \frac{6}{3} & \frac{7}{3} & \frac{8}{3} & \frac{9}{3} \\
   1 & 2 & 3 & 2 & 3 & 3 & 3
   \end{array}
   \]

   b. \( \frac{1}{8} \)

   \[
   \begin{array}{ccccc}
   \frac{1}{8} & \frac{1}{8} & \frac{1}{8} & \frac{1}{8} \\
   2 & 3 & 3 & 3
   \end{array}
   \]

   c. \( \frac{1}{4} \)

   \[
   \begin{array}{cccccc}
   \frac{1}{4} & \frac{1}{4} & \frac{1}{4} & \frac{1}{4} \\
   2 & 3 & 3 & 3
   \end{array}
   \]

   d. \( \frac{1}{2} \)

   \[
   \begin{array}{cccccc}
   \frac{1}{2} & \frac{1}{2} & \frac{1}{2} & \frac{1}{2} \\
   3 & 3 & 3 & 3
   \end{array}
   \]

   e. \( \frac{1}{5} \)

   \[
   \begin{array}{cccccc}
   \frac{1}{5} & \frac{1}{5} & \frac{1}{5} & \frac{1}{5} & \frac{1}{5} \\
   6 & 6 & 6 & 6 & 6
   \end{array}
   \]
2. Partition each whole into 6 unit fractions. Label each fraction. Count up as you go. Box the whole numbers. Box the fractions that are located at the same points as whole numbers.

3. Partition each whole into 2 unit fractions. Label each fraction. Count up as you go. Box the fractions that are located at the same points as whole numbers.

4. Draw a number line with endpoints 0 and 3. Label the wholes. Partition each whole into 5 unit fractions. Label all the fractions from 0 to 3. Use a separate paper if you need more space.
Name ____________________________ Date _________________

1. Locate and label the following fractions on the number line.

\[ \frac{0}{6}, \frac{6}{6}, \frac{12}{6}, \frac{3}{6}, \frac{9}{6} \]

\[ \text{Number Line: } 0 \quad 1 \quad 2 \quad 3 \]

2. Locate and label the following fractions on the number line.

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

\[ \text{Number Line: } 1 \quad 2 \quad 3 \quad 4 \]

3. Locate and label the following fractions on the number line.

\[ \frac{18}{3}, \frac{14}{3}, \frac{9}{3}, \frac{11}{3}, \frac{6}{3} \]

\[ \text{Number Line: } 2 \quad 3 \quad 4 \quad 5 \quad 6 \]
4. For a measurement project in math class, students measured the lengths of their pinky fingers. Alex’s measured 2 inches long. Jerimiah’s pinky finger was \( \frac{7}{4} \) inches long. Whose finger is longer? Draw a number line to help prove your answer.

5. Marcy ran 4 km after school. She stopped to tie her shoelace at \( \frac{7}{5} \) km. Then she stopped to switch songs on her iPod at \( \frac{12}{5} \) km. Draw a number line showing Marcy’s run. Include her starting and finishing points and the 2 places where she stopped.
Name _________________________________ Date ________________

1. Locate and label the following fractions on the number lines.

\[
\frac{7}{3} \quad \frac{2}{3} \quad \frac{4}{3}
\]

2. Katie bought 2 one-gallon bottles of juice for a party. Her guests drank \(\frac{8}{4}\) gallons of juice. What fraction of juice didn’t they drink? Draw a number line to show and explain your answer.
Locate and label the following fractions on the number lines.

1. \(\frac{1}{2}\) \(\frac{4}{2}\) \(\frac{5}{2}\)

2. \(\frac{11}{3}\) \(\frac{6}{3}\) \(\frac{8}{3}\)

3. \(\frac{20}{4}\) \(\frac{13}{4}\) \(\frac{23}{4}\)
4. Wayne went on a 4 km hike. He took a break at $\frac{4}{3}$ km. He took a drink of water at $\frac{10}{3}$ km. Show Wayne’s hike on the number line. Include his starting and finishing place, and the 2 points where he stopped.

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5. Ali wants to buy a piano. The piano measures $\frac{19}{4}$ ft long. She has a space 5 ft long for the piano in her house. Does she have enough room? Draw a number line to show and explain your answer.

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Name _______________________________ Date _________________

Directions: Place the 2 fractions on the number line. Circle the fraction with the distance closest to 0. Then compare using >, <, or =. The first problem is done for you.

1. \(\frac{1}{4}\) < \(\frac{3}{4}\)

2. \(\frac{2}{6}\) < \(\frac{3}{6}\)

3. \(\frac{1}{2}\) < \(\frac{1}{4}\)

4. \(\frac{2}{3}\) < \(\frac{2}{6}\)

5. \(\frac{11}{8}\) < \(\frac{7}{4}\)
6. JoAnn and Lupe live straight down the street from their school. JoAnn walks $\frac{5}{6}$ mile and Lupe walks $\frac{7}{8}$ mile home from school every day. Draw a number line to model how far each girl walks. Who walks the least? Explain using pictures, numbers, and words.

7. Cheryl cuts 2 pieces of thread. The blue thread is $\frac{5}{4}$ meters long. The red thread is $\frac{4}{5}$ meters long. Draw a number line to model the length of each piece of thread. Which piece of thread is shorter? Explain how you know using pictures, numbers, and words.

8. Brandon makes homemade spaghetti. He measures 3 noodles. One measures $\frac{7}{8}$ feet, the second is $\frac{7}{4}$ feet, and the third is $\frac{4}{2}$ feet long. Draw a number line to model the length of each piece of spaghetti. Write a number sentence using $<$, $>$ or $=$ to compare the pieces. Explain using pictures, numbers, and words.
Name _______________________________ Date __________________

Directions: Place the two fractions on the number line. Circle the fraction with the distance closest to 0. Then compare using >, <, or =.

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

2. \( \frac{1}{2} \) \( \frac{3}{4} \)

3. Mr. Brady draws a fraction on the board. Ken said it’s \( \frac{2}{3} \), and Dan said it’s \( \frac{3}{2} \). Do both of these fractions mean the same thing? If not, which fraction is larger? Draw a number line to model \( \frac{2}{3} \) and \( \frac{3}{2} \). Use words, pictures, and numbers to explain your comparison.
Directions: Place the two fractions on the number line. Circle the fraction with the distance closest to 0. Then compare using >, <, or =.

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

2. \(\frac{4}{6}\)  \(\frac{1}{6}\)

3. \(\frac{1}{4}\)  \(\frac{1}{8}\)

4. \(\frac{4}{5}\)  \(\frac{4}{10}\)

5. \(\frac{8}{6}\)  \(\frac{5}{3}\)
6. Liz and Jay each have a piece of string. Liz’s string is $\frac{4}{6}$ yard long, and Jay’s string is $\frac{5}{7}$ yard long. Whose string is longer? Draw a number line to model the length of both strings. Explain the comparison using pictures, numbers, and words.

7. In a long jump competition, Wendy jumped $\frac{9}{10}$ meter and Judy jumped $\frac{10}{9}$ meters. Draw a number line to model the distance of each girl’s long jump. Who jumped the shorter distance? Explain how you know using pictures, numbers, and words.

8. Nikki has 3 pieces of yarn. The first piece is $\frac{5}{6}$ feet long, the second piece is $\frac{5}{3}$ feet long, and the third piece is $\frac{3}{2}$ feet long. She wants to arrange them from the shortest to the longest. Draw a number line to model the length of each piece of yarn. Write a number sentence using $<$, $>$ or $=$ to compare the pieces. Explain using pictures, numbers, and words.
Lesson 19 Worksheet

Name ____________________________________________ Date __________________________

1. Divide each number line into unit fractions as indicated. Then place the fractions. Write each whole as a fraction.

   a. halves \( \frac{3}{2} \), \( \frac{5}{2} \), \( \frac{4}{2} \)

   [Number line 1: 0, 1, 2, 3]

   b. fourths \( \frac{9}{4} \), \( \frac{11}{4} \), \( \frac{6}{4} \)

   [Number line 2: 0, 3]

   c. eighths \( \frac{24}{8} \), \( \frac{19}{8} \), \( \frac{16}{8} \)

   [Number line 3: 0, 3]

2. Use the number lines above to compare the following fractions using \( > \), \( < \), or \( = \).

   \( \frac{6}{4} \bigg\circ \frac{9}{4} \bigg\circ \frac{3}{2} \bigg\circ \frac{5}{2} \bigg\circ \frac{19}{8} \bigg\circ \frac{16}{8} \)

   \( \frac{16}{8} \bigg\circ \frac{3}{2} \bigg\circ \frac{9}{4} \bigg\circ \frac{19}{8} \bigg\circ \frac{4}{2} \bigg\circ \frac{16}{8} \)

   \( \frac{6}{4} \bigg\circ \frac{16}{8} \bigg\circ \frac{5}{2} \bigg\circ \frac{9}{4} \bigg\circ \frac{24}{8} \bigg\circ \frac{11}{4} \)
3. Choose a greater than comparison you made in problem 2. Use pictures, numbers, and words to explain how you made that comparison.

4. Choose a less than comparison you made in problem 2. Use pictures, numbers, and words to explain a different way of thinking about the comparison than what you wrote in problem 3.

5. Choose an equal to comparison you made in problem 2. Use pictures, numbers, and words to explain two ways that you can prove your comparison is true.
Name ___________________________________________ Date _________________

1. Divide each number line into unit fractions as indicated. Then place the fractions. Write each whole as a fraction.
   c. fourths $\frac{2}{4}, \frac{10}{4}, \frac{7}{4}$

2. Use the number line above to compare the following fractions using $>$, $<$, or $=$.

   $\frac{3}{4}$ □ $\frac{5}{4}$  $\frac{7}{4}$ □ $\frac{4}{4}$  3 □ $\frac{6}{4}$

3. Use the number line from problem 1. Which is larger, 2 wholes or $\frac{9}{4}$? Use words, pictures, and numbers to explain your answer.
Name ________________________________  Date __________________

1. Divide each number line into the given unit fractions. Then place the fractions. Write each whole as a fraction.
   
   a. thirds  \( \frac{6}{3} \), \( \frac{5}{3} \), \( \frac{8}{3} \)

   \[ \frac{1}{3} \quad \frac{2}{3} \quad \frac{3}{3} \]

   b. sixths  \( \frac{10}{6} \), \( \frac{18}{6} \), \( \frac{15}{6} \)

   \[ \frac{1}{6} \quad \frac{2}{6} \quad \frac{3}{6} \]

   c. fifths  \( \frac{14}{5} \), \( \frac{7}{5} \), \( \frac{11}{5} \)

   \[ \frac{1}{5} \quad \frac{2}{5} \quad \frac{3}{5} \]

2. Use the number lines above to compare the following fractions using >, <, or =.

   \[
   \frac{17}{6} \quad \frac{15}{6} \quad \frac{7}{3} \quad \frac{9}{3} \quad \frac{11}{5} \quad \frac{8}{5}
   \]

   \[
   \frac{4}{3} \quad \frac{8}{6} \quad \frac{13}{6} \quad \frac{8}{3} \quad \frac{11}{6} \quad \frac{5}{3}
   \]

   \[
   \frac{10}{6} \quad \frac{3}{3} \quad \frac{6}{3} \quad \frac{12}{6} \quad \frac{15}{5} \quad \frac{5}{3}
   \]
3. Use fractions from the number lines in problem 1. Complete the sentence. Use a words, pictures, or numbers to explain how you made that comparison.

___________ is greater than ____________.

4. Use fractions from the number lines in problem 1. Complete the sentence. Use a words, pictures, or numbers to explain how you made that comparison.

___________ is less than ____________.

5. Use fractions from the number lines in problem 1. Complete the sentence. Use a words, pictures, or numbers to explain how you made that comparison.

___________ is equal to ____________.
Lesson 20:
Recognize and Show that Equivalent Fractions Have the Same Size, Though Not Necessarily the Same Shape
1. Label what fraction of each shape is shaded. Then circle the fractions that are equal.

A

B

C

2. Label the fraction. Then draw 2 different shapes that have the same number of shaded and unshaded parts as the given figure.

A

B
3. Ann has 6 small square pieces of paper. 2 squares are grey. Ann cuts the 2 grey squares in half with a diagonal line from one corner to the other.

   [Grey squares]

   a. What shapes does she have now?

   b. How many of each shape does she have?

   c. Use all the shapes with no overlaps. Draw different ways Ann’s set of shapes might look. What fraction of the figure is grey?

4. Laura has 2 different beakers that hold exactly 1 liter. She pours \( \frac{1}{2} \) liter of blue liquid into Beaker A. She pours \( \frac{1}{2} \) liter of orange liquid into Beaker B. Susan says the amounts are not equal. Cristina says they are. Explain who you think is correct and why.
1. Label what fraction of the figure is shaded. Then circle the fractions that are equal.

2. What fraction of the figures are shaded? Draw 2 different representations of the same fractional amount.
Name ____________________________ Date __________________

1. What fraction of the figure is shaded? Draw 2 different representations of the same fractional amount.

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

2.  
   a. These two shapes both show \( \frac{4}{5} \). Are they equivalent? Why or why not?

   \[ \frac{4}{5} \]

   \[ \frac{4}{5} \]

   b. Draw two different representations of \( \frac{4}{5} \) that are equivalent.

3. Diana ran a quarter mile straight down the street. Becky ran a quarter mile on a track. Who ran more? Explain your thinking.

   Diana  __________________________

   Becky  [Circle]
Name ___________________________  Date ________________

1. Use the unit fractions on the right to count up on the number line. Label the missing fractions.

2. Use the number lines above to:
   - Color fractions equal to 1 half blue.
   - Color fractions equal to 1 yellow.
   - Color fractions equal to 3 halves green.
   - Color fractions equal to 2 red.

3. Use the number lines above to make the number sentences true.

\[
\frac{2}{4} = \frac{6}{6} = \frac{2}{6} = \frac{3}{2} = \frac{6}{6} = \frac{6}{6}
\]
4. Jack and Jill use rain gauges the same size and shape to measure rain on the top of a hill. Jack uses a rain gauge marked in fourths of an inch. Jill’s gauge measures rain in eighths of an inch. On Thursday, Jack’s gauge measured $\frac{2}{4}$ inches of rain. They both had the same amount of water, so what was the reading on Jill’s gauge Thursday? Draw a number line to help explain your thinking.

5. Jack and Jill’s baby brother Rosco also had a gauge the same size and shape on the same hill. He told Jack and Jill that there had been $\frac{1}{2}$ inch of rain on Thursday. Is he right? Why or why not? Use words and a number line to explain your answer.
1. Claire went home after school and shared with her mother that 1 whole is the same as \( \frac{2}{2} \) and \( \frac{6}{6} \). Her mother asked why, but she couldn’t explain it. Use a number line and words to help Claire show and explain why \( 1 = \frac{2}{2} = \frac{6}{6} \).
1. Use the unit fractions on the right to count up on the number line. Label the missing fractions.

   - \[\frac{1}{4}\]
   - \[\frac{1}{8}\]
   - \[\frac{1}{3}\]
   - \[\frac{1}{6}\]

2. Use the number lines above to:
   - Color fractions equal to 1 purple.
   - Color fractions equal to 2 fourths yellow.
   - Color fractions equal to 2 blue.
   - Color fractions equal to 5 thirds green.
   - Write a pair of fractions that are equivalent.

   \[\text{______________} = \text{______________}\]
3. Use the number lines on the previous page to make the number sentences true.

\[
\frac{1}{4} = \frac{8}{32} \quad \frac{6}{4} = \frac{12}{8} \quad \frac{2}{3} = \frac{6}{9}
\]

\[
\frac{6}{3} = \frac{12}{6} \quad \frac{3}{3} = \frac{6}{6} \quad 2 = \frac{8}{4} = \frac{8}{8}
\]

4. Mr. Fairfax ordered 3 large pizzas for a class party. Group A ate \(\frac{6}{6}\) of the first pizza, and Group B ate \(\frac{8}{6}\) of the second pizza. During the party, the class discussed which group ate more pizzas.

a. Did group A or B eat more pizza? Use words and pictures to explain your answer to the class.

b. Later Group C ate all remaining slices of pizza. What fraction of the pizza did group C eat? Use words and pictures to explain your answer.
1. Write what fraction of the square is shaded in the blanks then match the equivalent fractions.

   _______   _______  _______  _______  _______  _______  
   _______   _______  _______  _______  _______  _______  
   _______   _______  _______  _______  _______  _______  
   _______   _______  _______  _______  _______  _______  
   _______   _______  _______  _______  _______  _______  
   _______   _______  _______  _______  _______  _______  
   _______   _______  _______  _______  _______  _______  
   _______   _______  _______  _______  _______  _______  

Name __________________________________________ Date ________________
2. Write the missing parts of the fractions.

\[ \frac{1}{3} = \square \]
\[ \frac{2}{4} = \square \]
\[ \frac{4}{8} = \square \]

3. Why does it take 2 copies of \( \frac{1}{8} \) to show the same amount as 1 copy of \( \frac{1}{4} \)? Explain your answer in words and pictures.

4. How many sixths does it take to make the same amount as \( \frac{1}{3} \)? Explain your answer in words and pictures.

5. Why does it take 10 copies of 1 sixth to make the same amount as 5 copies of 1 third? Explain your answer in words and pictures.
1. Draw and label two models that show equivalent fractions.

2. Draw a number line that proves your thinking about problem 1.
1. Write what fraction of the figure is shaded in the blanks then match the equivalent fractions.

   _______   _______
   ____     ____
   _____   _____
   ____     ____
   _____   _____
   ____     ____
   _____   _____

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2. Complete the fractions to make true statements.

\[ \frac{1}{2} = \frac{4}{4} \quad \frac{3}{5} = \frac{6}{10} \quad \frac{3}{9} = \frac{6}{18} \]

3. Why does it take 3 copies of \( \frac{1}{6} \) to show the same amount as 1 copy of \( \frac{1}{2} \)? Explain your answer in words and pictures.

4. How many ninths does it take to make the same amount as \( \frac{1}{3} \)? Explain your answer in words and pictures.

5. A pie was cut into 8 slices equally. If Ruben ate \( \frac{3}{4} \) of the pie, how many slices did he eat? Write the answer in eighths. Explain your answer using a number line and words.
1. On the number line above, use a red crayon to divide each whole into 4 unit fractions and label each one above the line. Use a fraction strip to help you estimate if necessary.

2. On the number line above, use a blue crayon to divide each whole into 8 unit fractions and label each one below the line. Re-fold your fraction strip from #1 to help you estimate.

3. List the fractions that name the same place on the number line.

4. Using your number line to help, what red fraction and what blue fraction would be equal to \(\frac{7}{2}\)? Draw the part of the number line that would include these fractions below and label it.
5. Write two different fraction names for the dot on the number line. You may use halves, thirds, fourths, fifths, sixths or eighths. Use fraction strips to help you if necessary.

\[
\begin{align*}
\text{dot on number line:} & \quad \frac{1}{2} = \frac{1}{2} \\
\text{other fraction names:} & \quad \frac{2}{4} = \frac{2}{4} \\
\end{align*}
\]

6. Cameron and Terrance plan to run in the City Race on Saturday. Cameron has decided that he will divide his race into 3 equal parts and will stop to rest after running 2 of them. Terrance divides his race into 6 equal parts and will stop and rest after running 2 of them. Will the boys rest at the same spot in the race? Why or why not? Draw a number line to explain your answer.
1. Henry and Maddie were in a pie eating contest. The pies were cut either into thirds or sixths. Henry picked up a pie cut into sixths, and ate \( \frac{4}{6} \) of it in 1 minute. Maddie picked up a pie cut into thirds. What fraction of pie does Maddie have to eat in 1 minute to tie with Henry? Draw a number line and use words to explain your answer.
1. On the number line above, use a crayon to divide each whole into 3 unit fractions and label each one above the line.

2. On the number line above, use a different color crayon to divide each whole into 6 unit fractions and label each one.

3. Write the fractions that name the same place on the number line below.

4. Using your number line to help, name the fraction equivalent to $\frac{20}{6}$. Name the fraction equivalent to $\frac{12}{3}$. Draw the part of the number line that would include these fractions below and label it.

\[
\frac{20}{6} = \frac{\Box}{3} \quad \frac{12}{3} = \frac{\Box}{6}
\]
5. Write two different fraction names for the dot on the number line. You may use halves, thirds, fourths, fifths, sixths, eighths, or tenths.

\[ \frac{\_\_\_}{\_\_\_} = \frac{\_\_\_}{\_\_\_} \]

\[ \frac{\_\_\_}{\_\_\_} = \frac{\_\_\_}{\_\_\_} \]

\[ \frac{\_\_\_}{\_\_\_} = \frac{\_\_\_}{\_\_\_} \]

6. Danielle and Mandy each ordered a large pizza for dinner. Danielle’s pizza was cut into sixths, and Mandy’s pizza was cut into twelfths. Danielle ate 2 sixths of her pizza. If Mandy wants to eat the same amount of pizza as Danielle, how many slices of pizza will she have to eat? Write the answer as a fraction. Draw a number line to explain your answer.
1. Write number bonds as indicated. Partition and label the number line to show the unit fractions of the number bond. Don't forget to rename the 0 and 1 as fractions of the given unit.

Halves

Thirds

Fourths

Fifths
2. Circle all the fractions above that are equal to 1. Write them in a number sentence below.

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

3. What pattern do you notice in the fractions that are equivalent to 1?

4. Taylor took his little brother to get pizza. Each boy ordered a small pizza. Taylor’s pizza was cut in fourths, and his brother’s was cut in thirds. After they had both eaten all of their pizza, Taylor’s little brother said, “Hey that was no fair! You got more than me! You got 4 pieces, I only got 3!”

Should Taylor’s little brother be mad? What could you say to explain the situation to him? Use words, pictures, or a number line.
Name ________________________________ Date ________________

1. Write number bonds as indicated. Partition and label the number line to show the unit fractions of the number bond. Don’t forget to rename the 0 and 1 as fractions of the given unit.

![Number Bond and Number Line]

2. How many copies of $\frac{1}{4}$ does it take to make 1 whole? What’s the fraction for 1 whole in this case? Use the number line and/or the number bonds to help you explain.
1. Write number bonds as indicated. Partition and label the number line to show the unit fractions of the number bond. Don’t forget to rename the 0 and 1 as fractions of the given unit.

- **Fifths**

- **Sixths**

- **Sevenths**

- **Eighths**
2. Circle all the fractions above that are equal to 1. Write them in a number sentence below.

\[
\frac{5}{5} = \text{________________} = \text{________________} = \text{________________}
\]

3. What pattern do you notice in the fractions that are equivalent to 1? Following this pattern, how would you write the next whole as a fraction?

4. In an Art class, Mr. Joselyn gave everyone a 1 foot skewer to measure and cut. Vivian broke hers into 5 equal pieces, and Scott broke his into 7 equal pieces. Scott said to Vivian, “The total length of my stick must be longer than yours because I have 7 pieces and you only have 5.” Is Scott correct? Use words, pictures, or a number line to help you explain.
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