Examples for each lesson:

Lesson 9.1

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 (\underline{\text{fraction strips}}) \underline{\text{compare}} \underline{\text{the lengths of the models}} to find which distance is shorter.</td>
<td></td>
</tr>
</tbody>
</table>

More information on this strategy is available on Animated Math Model #35.
Lesson 9.2

Compare Fractions with the Same Denominator

Potato'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.

Lesson 9.3

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

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

\( \frac{1}{3} \succ \frac{1}{8} \)

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

More information on this strategy is available on Animated Math Model #36.
Lesson 9.4

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.

<table>
<thead>
<tr>
<th>$\frac{2}{3}$</th>
<th>$\frac{3}{4}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\frac{1}{3}$</td>
<td>$\frac{1}{3}$</td>
</tr>
<tr>
<td>$\frac{1}{3}$</td>
<td>$\frac{1}{3}$</td>
</tr>
</tbody>
</table>

So, $\frac{2}{3} > \frac{3}{4}$.

**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.

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 $\frac{3}{6}$.

More information on this strategy is available on Animated Math Model #35.

Lesson 9.5

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 $\frac{7}{8}$.

**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 $\frac{2}{8}$, $\frac{5}{8}$, $\frac{7}{8}$. 
Lesson 9.6

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 $\frac{1}{2}$. $\frac{1}{2} = \frac{3}{4}$

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 $\frac{2}{4}$.

More information on this strategy is available on Animated Math Model #37.

Lesson 9.7

Equivalent Fractions

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

Find a fraction that is equivalent to $\frac{3}{4}$. $\frac{3}{4} = \frac{6}{8}$

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 $\frac{3}{4}$.

More information on this strategy is available on Animated Math Model #37.
Vocabulary

Equivalent – two or more sets that name the same amount

Equivalent fractions – two or more fractions that name the same amount

Equal to (=) – a symbol used to compare two numbers having the same amount or value

Greater than (>) – a symbol used to compare two numbers, with the greater number given first

Less than (<) – a symbol used to compare two numbers, with the lesser number given first