Name _____

Compare and Order Fractions

Essential Question How can you order fractions?

Unlock the Problem Real World

Jody has equal-size bins for the recycling center. She filled $\frac{3}{5}$ of a bin with plastics, $\frac{1}{12}$ of a bin with paper, and $\frac{9}{10}$ of a bin with glass. Which bin is the most full?

- Underline what you need to find.
- Circle the fractions you will compare.

Example 1 Locate and label $\frac{3}{5}$, $\frac{1}{12}$, and $\frac{9}{10}$ on the number line.

0       $\frac{1}{2}$ 1
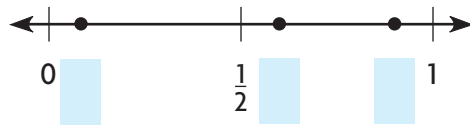
Math Idea
Sometimes it is not reasonable to find the exact location of a point on a number line. Benchmarks can help you find approximate locations.

STEP 1 Compare each fraction to $\frac{1}{2}$.

$\frac{3}{5} \bigcirc \frac{1}{2}$ $\frac{1}{12} \bigcirc \frac{1}{2}$ $\frac{9}{10} \bigcirc \frac{1}{2}$

_____ and _____ are both greater than $\frac{1}{2}$.

_____ is less than $\frac{1}{2}$.

Label $\frac{1}{12}$ on the number line above.

STEP 2 Compare $\frac{3}{5}$ and $\frac{9}{10}$.

Think: Use 10 as a common denominator.

$$\frac{3}{5} = \frac{ \times }{ \times } = \frac{}{}$$

Since $\frac{6}{10} \bigcirc \frac{9}{10}$, you know that $\frac{3}{5} \bigcirc \frac{9}{10}$.

Label $\frac{3}{5}$ and $\frac{9}{10}$ on the number line above.

The fraction the greatest distance from 0 has the greatest value.

The fraction with the greatest value is _____.
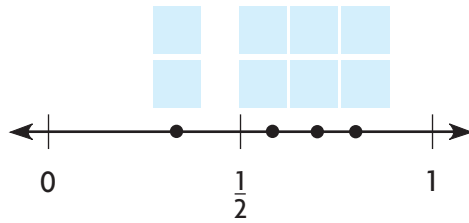
So, the bin with _____ is the most full.

- Compare the distance between $\frac{3}{5}$ and 0 and the distance between $\frac{9}{10}$ and 0. What can you conclude about the relationship between $\frac{3}{5}$ and $\frac{9}{10}$? Explain.

_____

_____

Math Talk

MATHEMATICAL PRACTICES ④

Use Models How do you know you located $\frac{3}{5}$ on the number line correctly?

🔒 **Example 2** Write $\frac{7}{10}$, $\frac{1}{3}$, $\frac{7}{12}$, and $\frac{8}{10}$ in order from least to greatest.

STEP 1 Compare each fraction to $\frac{1}{2}$.

List fractions that are less than $\frac{1}{2}$: _____

List fractions that are greater than $\frac{1}{2}$: _____

The fraction with the least value is _____ .

Locate and label $\frac{1}{3}$ on the number line above.

STEP 2 Compare $\frac{7}{10}$ to $\frac{7}{12}$ and $\frac{8}{10}$.

Think: $\frac{7}{10}$ and $\frac{7}{12}$ have a common numerator.

$\frac{7}{10}$ ◯ $\frac{7}{12}$

Think: $\frac{7}{10}$ and $\frac{8}{10}$ have a common denominator.

$\frac{7}{10}$ ◯ $\frac{8}{10}$

Locate and label $\frac{7}{10}$, $\frac{7}{12}$, and $\frac{8}{10}$ on the number line above.
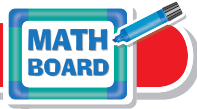
The fractions in order from least to greatest are _____ .

So, _____ < _____ < _____ < _____ .

Try This! Write $\frac{3}{4}$, $\frac{3}{6}$, $\frac{1}{3}$, and $\frac{2}{12}$ in order from least to greatest.
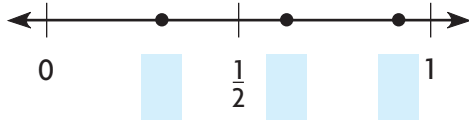
_____ < _____ < _____ < _____

Name _____

1. Locate and label points on the number line to help you write $\frac{3}{10}$, $\frac{11}{12}$, and $\frac{5}{8}$ in order from least to greatest.

0 ▢ $\frac{1}{2}$ ▢ ▢ 1

_____

Write the fraction with the greatest value.

✓ **2.** $\frac{7}{10}, \frac{1}{5}, \frac{9}{10}$

3. $\frac{5}{6}, \frac{7}{12}, \frac{7}{10}$

4. $\frac{2}{8}, \frac{1}{8}, \frac{2}{4}, \frac{2}{6}$

_____   _____   _____

Write the fractions in order from least to greatest.

✓ **5.** $\frac{1}{4}, \frac{3}{6}, \frac{1}{8}$

6. $\frac{3}{5}, \frac{2}{3}, \frac{3}{10}, \frac{4}{5}$

7. $\frac{3}{4}, \frac{7}{12}, \frac{5}{12}$

_____   _____   _____

Math Talk | MATHEMATICAL PRACTICES ②

Use Reasoning How can benchmarks help you order fractions?

On Your Own

Write the fractions in order from least to greatest.

8. $\frac{2}{5}, \frac{1}{3}, \frac{5}{6}$

9. $\frac{4}{8}, \frac{5}{12}, \frac{1}{6}$

10. $\frac{7}{100}, \frac{9}{10}, \frac{4}{5}$

_____   _____   _____

MATHEMATICAL PRACTICE ② **Reason Quantitatively Algebra** Write a numerator that makes the statement true.

11. $\frac{1}{2} < \frac{\Box}{10} < \frac{4}{5}$

12. $\frac{1}{4} < \frac{5}{12} < \frac{\Box}{6}$

13. $\frac{\Box}{8} < \frac{3}{4} < \frac{7}{8}$

🔑 Unlock the Problem Real World

14. **THINK SMARTER** Nancy, Lionel, and Mavis ran in a 5-kilometer race. The table shows their finish times. In what order did Nancy, Lionel, and Mavis finish the race?

   a. What do you need to find?

   _____

   _____

   b. What information do you need to solve the problem?

   _____

   _____

   c. What information is not necessary?

   _____

   d. How will you solve the problem?

   _____

   _____

Finish line

5-Kilometer Race Results	
Name	**Time**
Nancy	$\frac{2}{3}$ hour
Lionel	$\frac{7}{12}$ hour
Mavis	$\frac{3}{4}$ hour

   e. Show the steps to solve the problem.

   f. Complete the sentences.

   The runner who finished first is _____.

   The runner who finished second is _____.

   The runner who finished third is _____.

15. **GO DEEPER** Alma used 3 beads to make a necklace. The lengths of the beads are $\frac{5}{6}$ inch, $\frac{5}{12}$ inch, and $\frac{1}{3}$ inch. What are the lengths in order from shortest to longest?

   _____

16. **THINK SMARTER** Victor has his grandmother's recipe for making mixed nuts.

$\frac{3}{4}$ cup pecans	$\frac{2}{12}$ cup peanuts
$\frac{1}{2}$ cup almonds	$\frac{7}{8}$ cup walnuts

   Order the ingredients used in the recipe from least to greatest.

   _____

Compare and Order Fractions

Write the fractions in order from least to greatest.

1. $\frac{5}{8}, \frac{2}{12}, \frac{8}{10}$

Use benchmarks and a number line.

Think: $\frac{5}{8}$ is close to $\frac{1}{2}$. $\frac{2}{12}$ is close to 0.

$\frac{8}{10}$ is close to 1.

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◄──┼──●────────┼───●────●────┼──►
   0   2/12     1/2  5/8   8/10  1
```

$\underline{\qquad\frac{2}{12} < \frac{5}{8} < \frac{8}{10}\qquad}$

2. $\frac{1}{5}, \frac{2}{3}, \frac{5}{8}$

$\underline{\qquad\qquad\qquad\qquad}$
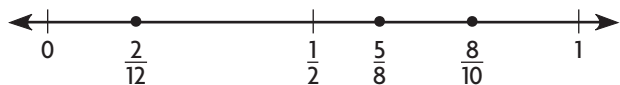
3. $\frac{1}{2}, \frac{2}{5}, \frac{6}{10}$

4. $\frac{4}{6}, \frac{7}{12}, \frac{5}{10}$

5. $\frac{1}{4}, \frac{5}{8}, \frac{1}{2}$

$\underline{\qquad\qquad\qquad}$ $\underline{\qquad\qquad\qquad}$ $\underline{\qquad\qquad\qquad}$

Problem Solving Real World

6. Amy's math notebook weighs $\frac{1}{2}$ pound, her science notebook weighs $\frac{7}{8}$ pound, and her history notebook weighs $\frac{3}{4}$ pound. What are the weights in order from lightest to heaviest?

$\underline{\qquad\qquad\qquad\qquad}$

$\underline{\qquad\qquad\qquad\qquad}$

7. Carl has three picture frames. The thicknesses of the frames are $\frac{4}{5}$ inch, $\frac{3}{12}$ inch, and $\frac{5}{6}$ inch. What are the thicknesses in order from least to greatest?

$\underline{\qquad\qquad\qquad\qquad}$

$\underline{\qquad\qquad\qquad\qquad}$

8. **WRITE** *Math* How is ordering fractions on a number line similar to and different from ordering whole numbers on a number line?

$\underline{\qquad\qquad\qquad\qquad\qquad\qquad}$

$\underline{\qquad\qquad\qquad\qquad\qquad\qquad}$

Lesson Check (4.NF.A.2)

1. Juan's three math quizzes this week took him $\frac{1}{3}$ hour, $\frac{4}{6}$ hour, and $\frac{1}{5}$ hour to complete. List the lengths of time in order from least to greatest.

_____

2. On three days last week, Maria ran $\frac{3}{4}$ mile, $\frac{7}{8}$ mile, and $\frac{3}{5}$ mile. List the distances in order from least to greatest.

_____

Spiral Review (4.OA.B.4, 4.NBT.B.5, 4.NBT.B.6, 4.NF.A.1)

3. Santiago collects 435 cents in nickels. How many nickels does he collect?

_____

4. Lisa has three classes that each last 50 minutes. What is the total number of minutes of the three classes?

_____

5. Alicia wrote these numbers: 2, 9, 15, 21. Which of Alicia's numbers is NOT a composite number?

_____

6. Mrs. Carmel serves $\frac{6}{8}$ of a loaf of bread with dinner. Write a fraction with a denominator of 4 that is equivalent to $\frac{6}{8}$.

_____

FOR MORE PRACTICE GO TO THE Personal Math Trainer