Name _____

Compare and Order Fractions

Essential Question How can you order fractions?

Common Core — **Number and Operations—Fractions—4.NF.A.2**

MATHEMATICAL PRACTICES
MP2, MP4, MP6

Unlock the Problem

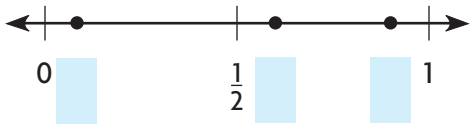
Real World

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.



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 $\frac{1}{2}$.

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

_____ 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.

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

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

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.

Math Talk

MATHEMATICAL PRACTICES 4

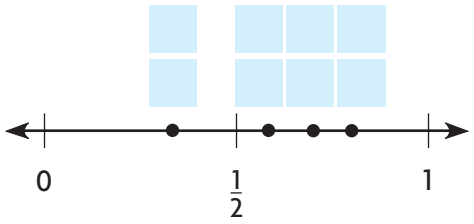
Use Models How do you know you located $\frac{3}{5}$ on the number line correctly?

- 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.

_____

_____

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.

$\frac{7}{10} \bigcirc \frac{7}{12}$

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

$\frac{7}{10} \bigcirc \frac{8}{10}$

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.

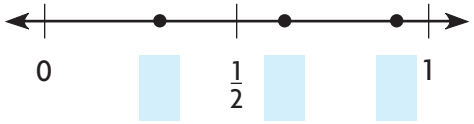
_____ < _____ < _____ < _____

Name _____

Share and Show

MATH BOARD

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.



_____

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

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

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

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?

Math on the Spot

5-Kilometer Race Results

Name	Time
Nancy	$\frac{2}{3}$ hour
Lionel	$\frac{7}{12}$ hour
Mavis	$\frac{3}{4}$ hour

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?

_____

_____

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.

_____

Name _____

Compare and Order Fractions

Common Core

COMMON CORE STANDARD—4.NF.A.2
Extend understanding of fraction equivalence and ordering.

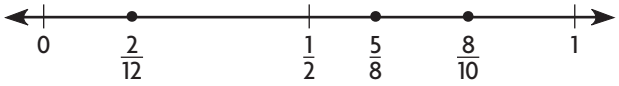
Write the fractions in order from least to greatest.

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.



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

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

_____

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

_____

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

_____

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

_____

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?

_____

_____

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?

_____

_____

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

_____

_____

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