Name _____

Compare Fractions Using Benchmarks

Essential Question How can you use benchmarks to compare fractions?

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

MATHEMATICAL PRACTICES
MP1, MP3, MP4

Unlock the Problem

Real World

David made a popcorn snack. He mixed $\frac{5}{8}$ gallon of popcorn with $\frac{1}{2}$ gallon of dried apple rings. Did he use more dried apple rings or more popcorn?

Activity Compare $\frac{5}{8}$ and $\frac{1}{2}$.

Materials ■ fraction strips

Use fraction strips to compare $\frac{5}{8}$ and $\frac{1}{2}$. Record on the model below.

$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$

$\frac{5}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$

$\frac{5}{8}$ ◯ $\frac{1}{2}$

So, David used more _____.

Math Talk MATHEMATICAL PRACTICES 7

Look for Structure How are the number of eighth-size parts in $\frac{5}{8}$ related to the number of eighth-size parts you need to make $\frac{1}{2}$?

1. Write five fractions equivalent to $\frac{1}{2}$. What is the relationship between the numerator and the denominator of fractions equivalent to $\frac{1}{2}$?

_____

_____

2. How many eighths are equivalent to $\frac{1}{2}$?

_____

3. How can you compare $\frac{5}{8}$ and $\frac{1}{2}$ without using a model?

_____

_____

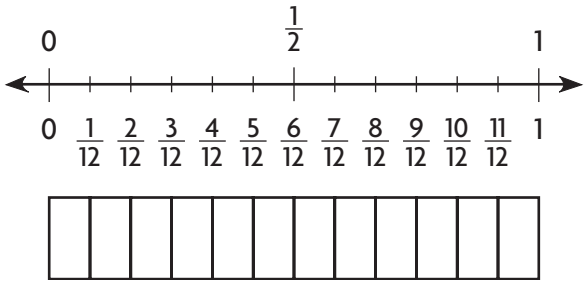
Benchmarks A **benchmark** is a known size or amount that helps you understand a different size or amount. You can use $\frac{1}{2}$ as a benchmark to help you compare fractions.

Example Use benchmarks to compare fractions.

A family hiked the same mountain trail. Evie and her father hiked $\frac{5}{12}$ of the trail before they stopped for lunch. Jill and her mother hiked $\frac{9}{10}$ of the trail before they stopped for lunch. Who hiked farther before lunch?

Compare $\frac{5}{12}$ and $\frac{9}{10}$ to the benchmark $\frac{1}{2}$.

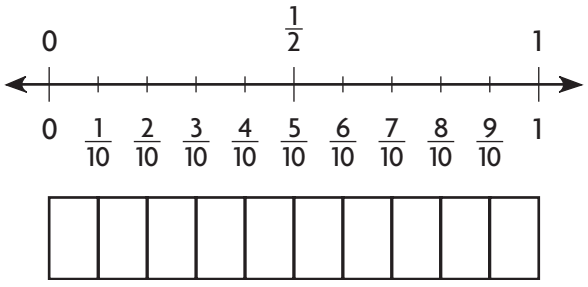
STEP 1 Compare $\frac{5}{12}$ to $\frac{1}{2}$.



Think: Shade $\frac{5}{12}$.

$\frac{5}{12}$ ◯ $\frac{1}{2}$

STEP 2 Compare $\frac{9}{10}$ to $\frac{1}{2}$.



Think: Shade $\frac{9}{10}$.

$\frac{9}{10}$ ◯ $\frac{1}{2}$

Since $\frac{5}{12}$ is _____ than $\frac{1}{2}$ and $\frac{9}{10}$ is _____ than $\frac{1}{2}$, you know that $\frac{5}{12}$ ◯ $\frac{9}{10}$.

So, _____ hiked farther before lunch.

4. Explain how you can tell $\frac{5}{12}$ is less than $\frac{1}{2}$ without using a model.

_____

_____

5. Explain how you can tell $\frac{7}{10}$ is greater than $\frac{1}{2}$ without using a model.

_____

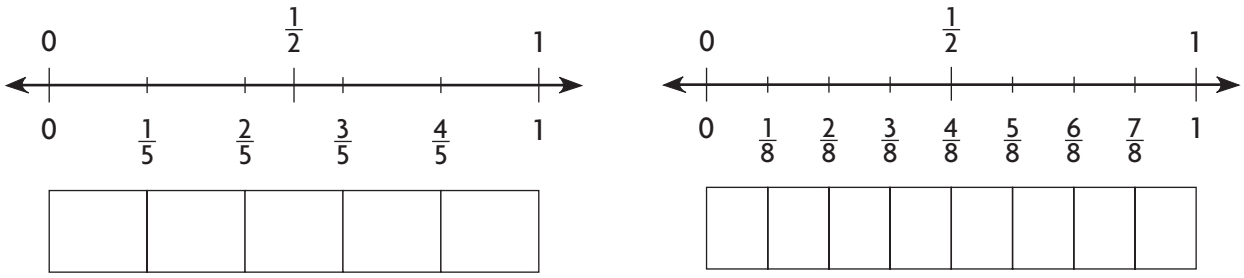
_____

Name _____

Share and Show

MATH BOARD

1. Compare $\frac{2}{5}$ and $\frac{1}{8}$. Write < or >.



$\frac{2}{5} \bigcirc \frac{1}{8}$

Compare. Write < or >.

2. $\frac{1}{2} \bigcirc \frac{4}{6}$

3. $\frac{3}{10} \bigcirc \frac{1}{2}$

4. $\frac{11}{12} \bigcirc \frac{4}{8}$

5. $\frac{5}{8} \bigcirc \frac{2}{5}$

Math Talk

MATHEMATICAL PRACTICES 6

Compare How do you know $\frac{1}{3} < \frac{1}{2}$?

On Your Own

Compare. Write < or >.

6. $\frac{8}{10} \bigcirc \frac{3}{8}$

7. $\frac{1}{3} \bigcirc \frac{7}{12}$

8. $\frac{2}{6} \bigcirc \frac{7}{8}$

9. $\frac{4}{8} \bigcirc \frac{2}{10}$

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

10. $\frac{2}{4} < \frac{\square}{6}$

11. $\frac{8}{10} > \frac{\square}{8}$

12. $\frac{10}{12} > \frac{\square}{4}$

13. $\frac{2}{5} < \frac{\square}{10}$

14. When two fractions are between 0 and $\frac{1}{2}$, how do you know which fraction is greater? Explain.

_____

15. GO DEEPER If you know that $\frac{2}{6} < \frac{1}{2}$ and $\frac{3}{4} > \frac{1}{2}$, what do you know about $\frac{2}{6}$ and $\frac{3}{4}$?

_____

16. GO DEEPER Sandra has ribbons that are $\frac{3}{4}$ yard, $\frac{2}{6}$ yard, $\frac{1}{5}$ yard, and $\frac{4}{7}$ yard long. She needs to use the ribbon longer than $\frac{2}{3}$ yard to make a bow. Which length of ribbon could she use for the bow?

_____

Problem Solving • Applications Real World

17. THINK SMARTER Saundra ran $\frac{7}{12}$ of a mile. Lamar ran $\frac{3}{4}$ of a mile. Who ran farther? Explain.

WRITE Math • Show Your Work

18. **What's the Question?** Selena ran farther than Manny.

19. GO DEEPER Chloe made a small pan of ziti and a small pan of lasagna. She cut the ziti into 8 equal parts and the lasagna into 9 equal parts. Her family ate $\frac{2}{3}$ of the lasagna. If her family ate more lasagna than ziti, what fraction of the ziti could have been eaten?

20. THINK SMARTER James, Ella, and Ryan biked around Eagle Lake. James biked $\frac{2}{10}$ of the distance in an hour. Ella biked $\frac{4}{8}$ of the distance in an hour. Ryan biked $\frac{2}{5}$ of the distance in an hour. Compare the distances biked by each person by matching the statements to the correct symbol. Each symbol may be used more than once or not at all.

$\frac{2}{10}$ ● $\frac{4}{8}$	•	• =
$\frac{4}{8}$ ● $\frac{2}{5}$	•	• <
$\frac{2}{10}$ ● $\frac{2}{5}$	•	• >

Name _____

Compare Fractions Using Benchmarks

Common Core

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

Compare. Write < or >.

1. $\frac{1}{8}$ ◯ $\frac{6}{10}$

   Think: $\frac{1}{8}$ is less than $\frac{1}{2}$.

   $\frac{6}{10}$ is more than $\frac{1}{2}$.

2. $\frac{4}{12}$ ◯ $\frac{4}{6}$

3. $\frac{2}{8}$ ◯ $\frac{1}{2}$

4. $\frac{3}{5}$ ◯ $\frac{3}{3}$

5. $\frac{7}{8}$ ◯ $\frac{5}{10}$

6. $\frac{9}{12}$ ◯ $\frac{1}{3}$

7. $\frac{4}{6}$ ◯ $\frac{7}{8}$

8. $\frac{2}{4}$ ◯ $\frac{2}{3}$

9. $\frac{3}{5}$ ◯ $\frac{1}{4}$

10. $\frac{6}{10}$ ◯ $\frac{2}{5}$

11. $\frac{1}{8}$ ◯ $\frac{2}{10}$

12. $\frac{2}{3}$ ◯ $\frac{5}{12}$

Problem Solving Real World

13. Erika ran $\frac{3}{8}$ mile. Maria ran $\frac{3}{4}$ mile. Who ran farther?

14. Carlos finished $\frac{1}{3}$ of his art project on Monday. Tyler finished $\frac{1}{2}$ of his art project on Monday. Who finished more of his art project on Monday?

15. WRITE Math Explain a strategy you could use to compare $\frac{2}{6}$ and $\frac{5}{8}$.

Lesson Check (4.NF.A.2)

1. What symbol makes the statement true?

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

2. Write a fraction, less than 1, with a demoninator of 6 that is greater than $\frac{3}{4}$.

Spiral Review (4.OA.A.3, 4.OA.B.4, 4.NBT.B.6)

3. Abigail is putting tiles on a table top. She needs 48 tiles for each of 8 rows. Each row will have 6 white tiles. The rest of the tiles will be purple. How many purple tiles will she need?

4. Each school bus going on the field trip holds 36 students and 4 adults. There are 6 filled buses on the field trip. How many people are going on the field trip?

5. Noah wants to display his 72 collector's flags. He is going to put 6 flags in each row. How many rows of flags will he have in his display?

6. Julian wrote this number pattern on the board:

3, 10, 17, 24, 31, 38.

Which of the numbers in Julian's pattern are composite numbers?

FOR MORE PRACTICE GO TO THE Personal Math Trainer