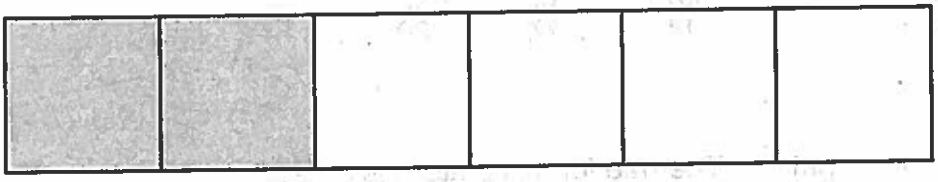
Name _____

Equivalent Fractions

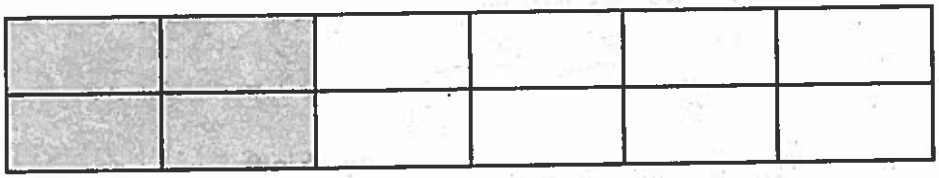
Write two fractions that are equivalent to $\frac{2}{6}$.

Step 1 Make a model to represent $\frac{2}{6}$.



The rectangle is divided into 6 equal parts, with 2 parts shaded.

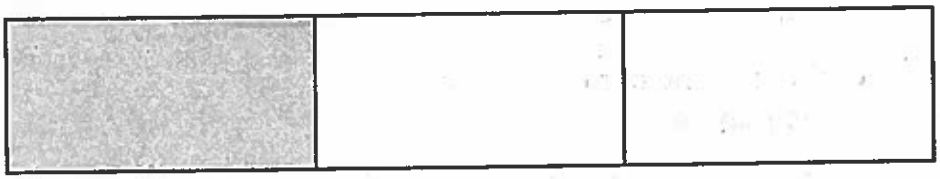
Step 2 Divide the rectangle from Step 1 in half.



The rectangle is now divided into 12 equal parts, with 4 parts shaded.

The model shows the fraction $\frac{4}{12}$. So, $\frac{2}{6}$ and $\frac{4}{12}$ are equivalent.

Step 3 Draw the same rectangle as in Step 1, but with only 3 equal parts. Keep the same amount of the rectangle shaded.



The rectangle is now divided into 3 equal parts, with 1 part shaded.

The model shows the fraction $\frac{1}{3}$. So, $\frac{2}{6}$ and $\frac{1}{3}$ are equivalent.

Use models to write two equivalent fractions.

1. $\frac{2}{4}$ _____

2. $\frac{4}{6}$ _____

© Houghton Mifflin Harcourt Publishing Company

Generate Equivalent Fractions

Write an equivalent fraction for $\frac{4}{5}$.

Step 1 Choose a whole number, like 2.
Step 2 Create a fraction using 2 as the numerator and denominator: $\frac{2}{2}$. This fraction is equal to 1. You can multiply a number by 1 without changing the value of the number.
Step 3 Multiply $\frac{4}{5}$ by $\frac{2}{2}$: $\frac{4 \times 2}{5 \times 2} = \frac{8}{10}$.
So, $\frac{4}{5}$ and $\frac{8}{10}$ are equivalent.

Write another equivalent fraction for $\frac{4}{5}$.

Step 1 Choose a different whole number, like 20.
Step 2 Create a fraction using 20 as the numerator and denominator: $\frac{20}{20}$.
Step 3 Multiply $\frac{4}{5}$ by $\frac{20}{20}$: $\frac{4 \times 20}{5 \times 20} = \frac{80}{100}$.
So, $\frac{4}{5}$ and $\frac{80}{100}$ are equivalent.

Write two equivalent fractions.

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

2. $\frac{4}{10}$ _____

3. $\frac{3}{8}$ _____

4. $\frac{3}{5}$ _____

© Houghton Mifflin Harcourt Publishing Company

Name _____

Simplest Form

A fraction is in **simplest form** when 1 is the only factor that the numerator and denominator have in common.

Tell whether the fraction $\frac{7}{8}$ is in simplest form.

Look for common factors in the numerator and the denominator.

Step 1 The numerator of $\frac{7}{8}$ is 7. List all the factors of 7.	$1 \times 7 = 7$ The factors of 7 are 1 and 7.
Step 2 The denominator of $\frac{7}{8}$ is 8. List all the factors of 8.	$1 \times 8 = 8$ $2 \times 4 = 8$ The factors of 8 are 1, 2, 4, and 8.
Step 3 Check if the numerator and denominator of $\frac{7}{8}$ have any common factors greater than 1.	The only common factor of 7 and 8 is 1.
So, $\frac{7}{8}$ is in simplest form.	

Tell whether the fraction is in simplest form. Write *yes* or *no*.

1. $\frac{4}{10}$ _____

2. $\frac{2}{8}$ _____

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

Write the fraction in simplest form.

4. $\frac{4}{12}$ _____

5. $\frac{6}{10}$ _____

6. $\frac{3}{6}$ _____

© Houghton Mifflin Harcourt Publishing Company

Common Denominators

A **common denominator** is a common multiple of the denominators of two or more fractions.

Write $\frac{2}{3}$ and $\frac{3}{4}$ as a pair of fractions with common denominators.

Step 1 Identify the denominators of $\frac{2}{3}$ and $\frac{3}{4}$.	$\frac{2}{3}$ and $\frac{3}{4}$ The denominators are 3 and 4.
Step 2 List multiples of 3 and 4. Circle common multiples.	**3:** 3, 6, 9, (12), 15, 18 **4:** 4, 8, (12), 16, 20 12 is a common multiple of 3 and 4.
Step 3 Rewrite $\frac{2}{3}$ as a fraction with a denominator of 12.	$\frac{2}{3} = \frac{2 \times 4}{3 \times 4} = \frac{8}{12}$
Step 4 Rewrite $\frac{3}{4}$ as a fraction with a denominator of 12.	$\frac{3}{4} = \frac{3 \times 3}{4 \times 3} = \frac{9}{12}$
So, you can rewrite $\frac{2}{3}$ and $\frac{3}{4}$ as $\frac{8}{12}$ and $\frac{9}{12}$.	

Write the pair of fractions as a pair of fractions with a common denominator.

1. $\frac{1}{2}$ and $\frac{1}{3}$ _____

2. $\frac{2}{4}$ and $\frac{5}{8}$ _____

3. $\frac{1}{2}$ and $\frac{3}{5}$ _____

4. $\frac{1}{4}$ and $\frac{5}{6}$ _____

5. $\frac{2}{5}$ and $\frac{2}{3}$ _____

6. $\frac{4}{5}$ and $\frac{7}{10}$ _____

© Houghton Mifflin Harcourt Publishing Company

Problem Solving • Find Equivalent Fractions

Kyle's mom bought bunches of balloons for a family party. Each bunch has 4 balloons, and $\frac{1}{4}$ of the balloons are blue. If Kyle's mom bought 5 bunches of balloons, how many balloons did she buy? How many of the balloons are blue?

Read the Problem		
What do I need to find?	**What information do I need to use?**	**How will I use the information?**
I need to find how many balloons Kyle's mom bought and how many of the balloons are blue.	Each bunch has 1 out of 4 balloons that are blue, and there are 5 bunches.	I will make a table to find the total number balloons Kyle's mom bought and the fraction of balloons that are blue.

Solve the Problem

I can make a table.

Number of Bunches	1	2	3	4	5
Total Number of Blue Balloons / Total Number of Balloons	$\frac{1}{4}$	$\frac{2}{8}$	$\frac{3}{12}$	$\frac{4}{16}$	$\frac{5}{20}$

Kyle's mom bought 20 balloons. 5 of the balloons are blue.

Make a table to solve.

1. Jackie is making a beaded bracelet. The bracelet will have no more than 12 beads. $\frac{1}{3}$ of the beads on the bracelet will be green. What other fractions could represent the part of the beads on the bracelet that will be green?

2. Ben works in his dad's bakery packing bagels. Each package can have no more than 16 bagels. $\frac{3}{4}$ of the bagels in each package are plain. What other fractions could represent the part of the bagels in each package that will be plain?

© Houghton Mifflin Harcourt Publishing Company

Compare Fractions Using 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.

Sara reads for $\frac{3}{6}$ hour every day after school. Connor reads for $\frac{2}{3}$ hour. Who reads for a longer amount of time?

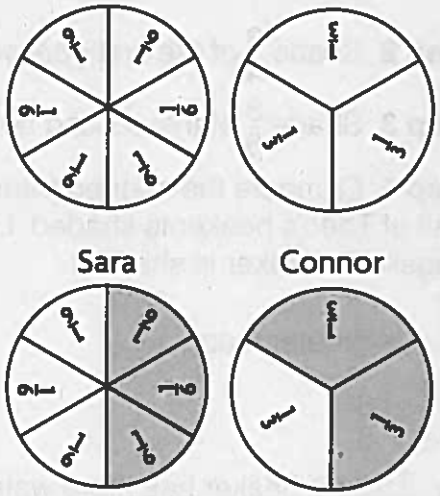
Compare the fractions. $\frac{3}{6} \bigcirc \frac{2}{3}$

Step 1 Divide one circle into 6 equal parts. Divide another circle into 3 equal parts.

Step 2 Shade $\frac{3}{6}$ of the first circle. How many parts will you shade? 3 parts

Step 3 Shade $\frac{2}{3}$ of the second circle. How many parts will you shade? 2 parts

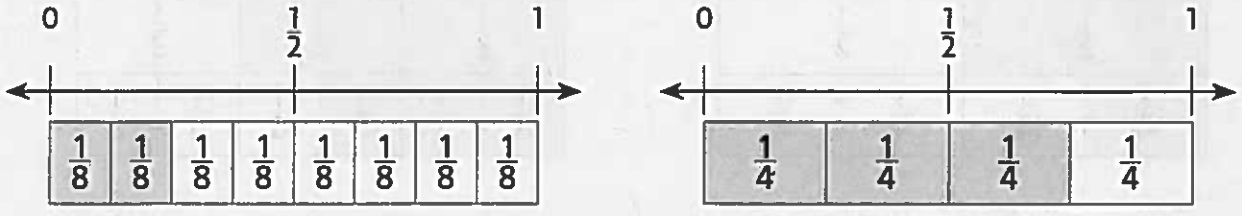
Step 4 Compare the shaded parts of each circle. Half of Sara's circle is shaded. More than half of Connor's circle is shaded.



$\frac{3}{6}$ is less than $\frac{2}{3}$. $\frac{3}{6} < \frac{2}{3}$

So, Connor reads for a longer amount of time.

1. Compare $\frac{2}{8}$ and $\frac{3}{4}$. Write < or >.



$\frac{2}{8} < \frac{3}{4}$

Compare. Write < or >.

2. $\frac{1}{4} \bigcirc \frac{8}{10}$

3. $\frac{7}{8} \bigcirc \frac{1}{3}$

4. $\frac{5}{12} \bigcirc \frac{1}{2}$

5. $\frac{2}{8} \bigcirc \frac{8}{12}$

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

7. $\frac{7}{12} \bigcirc \frac{2}{4}$

© Houghton Mifflin Harcourt Publishing Company

Compare Fractions

Theo filled a beaker $\frac{2}{4}$ full with water. Angelica filled a beaker $\frac{3}{8}$ full with water. Whose beaker has more water?

Compare $\frac{2}{4}$ and $\frac{3}{8}$.

Step 1 Divide one beaker into 4 equal parts. Divide another beaker into 8 equal parts.

Step 2 Shade $\frac{2}{4}$ of the first beaker.

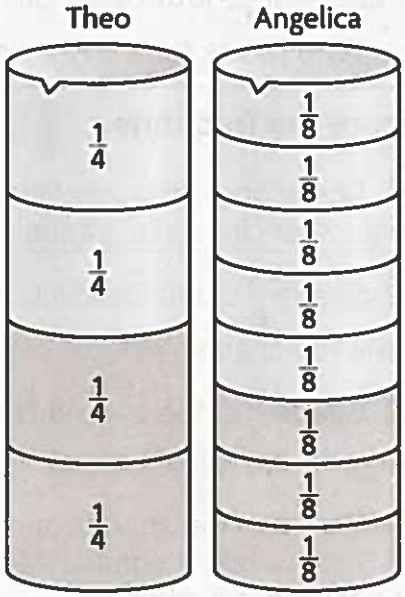
Step 3 Shade $\frac{3}{8}$ of the second beaker.

Step 4 Compare the shaded parts of each beaker. Half of Theo's beaker is shaded. Less than half of Angelica's beaker is shaded.

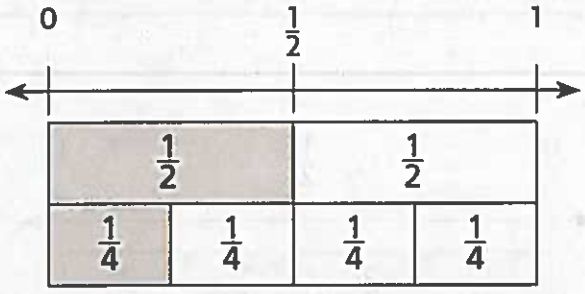
$\frac{2}{4}$ is greater than $\frac{3}{8}$.

$\frac{2}{4} > \frac{3}{8}$

So, Theo's beaker has more water.

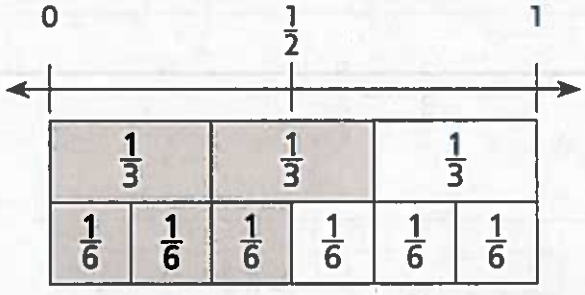


1. Compare $\frac{1}{2}$ and $\frac{1}{4}$.



Which is greater? _____

2. Compare $\frac{2}{3}$ and $\frac{3}{6}$.



Which is less? _____

Compare. Write <, >, or =.

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

4. $\frac{6}{12} \bigcirc \frac{5}{8}$

5. $\frac{2}{3} \bigcirc \frac{4}{6}$

6. $\frac{3}{8} \bigcirc \frac{1}{4}$

© Houghton Mifflin Harcourt Publishing Company

Compare and Order Fractions

Write $\frac{3}{8}$, $\frac{1}{4}$, and $\frac{1}{2}$ in order from least to greatest.

Step 1 Identify a common denominator.	Multiples of 8: (8), 16, 24 Multiples of 4: 4, (8), 16, Multiples of 2: 2, 4, 6, (8) Use 8 as a common denominator.
Step 2 Use the common denominator to write equivalent fractions.	$\frac{3}{8}$ $\frac{1}{4} = \frac{1 \times 2}{4 \times 2} = \frac{2}{8}$ $\frac{1}{2} = \frac{1 \times 4}{2 \times 4} = \frac{4}{8}$
Step 3 Compare the numerators.	$2 < 3 < 4$
Step 4 Order the fractions from least to greatest, using < or > symbols. So, $\frac{1}{4} < \frac{3}{8} < \frac{1}{2}$.	$\frac{2}{8} < \frac{3}{8} < \frac{4}{8}$

Write the fraction with the greatest value.

1. $\frac{2}{3}, \frac{1}{4}, \frac{1}{6}$ _____

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

3. $\frac{1}{8}, \frac{5}{12}, \frac{9}{10}$ _____

Write the fractions in order from least to greatest.

4. $\frac{9}{10}, \frac{1}{2}, \frac{4}{5}$ _____

5. $\frac{3}{4}, \frac{7}{8}, \frac{1}{2}$ _____

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

© Houghton Mifflin Harcourt Publishing Company