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. $\frac{4}{6}$

Equivalent Fraction Find

In the grid below, circle seven fractions that are equivalent to $\frac{2}{4}$.

$\frac{2}{6}$	$\frac{7}{12}$	$\frac{1}{4}$	$\frac{8}{10}$	$\frac{7}{8}$	$\frac{4}{5}$
$\frac{6}{12}$	$\frac{3}{10}$	$\frac{2}{3}$	$\frac{5}{12}$	$\frac{2}{8}$	$\frac{18}{36}$
$\frac{2}{5}$	$\frac{40}{100}$	$\frac{5}{6}$	$\frac{3}{12}$	$\frac{50}{100}$	$\frac{10}{12}$
$\frac{4}{8}$	$\frac{8}{12}$	$\frac{14}{28}$	$\frac{60}{100}$	$\frac{3}{8}$	$\frac{5}{8}$
$\frac{3}{4}$	$\frac{6}{10}$	$\frac{2}{12}$	$\frac{4}{6}$	$\frac{8}{16}$	$\frac{3}{5}$
$\frac{1}{5}$	$\frac{22}{44}$	$\frac{6}{8}$	$\frac{4}{12}$	$\frac{7}{10}$	$\frac{1}{8}$

1. Find two fractions in the grid that are not equivalent to $\frac{2}{4}$, but that are equivalent to each other.

_____

2. [Write Math ▶] Describe how you determined which fractions in the grid are equivalent to $\frac{2}{4}$.

_____

_____

_____

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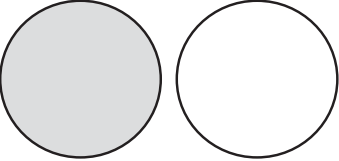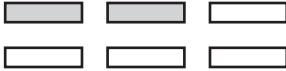
2. $\frac{4}{10}$

_____

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

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

_____

Name _____

Equivalent Art

Write the fraction represented by the shaded part of each design.
Then write 3 fractions that are equivalent to that fraction.

1. ★★★★★★

Fraction represented by
the shaded part of the
design:

_____

Three equivalent
fractions:

_____

2. ◇◇◇

Fraction represented by
the shaded part of the
design:

_____

Three equivalent
fractions:

_____

3. ♡♡♡♡♡

Fraction represented by
the shaded part of the
design:

_____

Three equivalent
fractions:

_____

4. ○○

Fraction represented by
the shaded part of the
design:

_____

Three equivalent
fractions:

_____

5. △△△△△△△△

Fraction represented by
the shaded part of the
design:

_____

Three equivalent
fractions:

_____

6. ▭▭▭ ▭▭▭

Fraction represented by
the shaded part of the
design:

_____

Three equivalent
fractions:

_____

7. **Stretch Your Thinking** There is a relationship between the shaded
part of each design and the unshaded part. Describe this relationship.

_____

_____

_____

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. $\frac{3}{6}$

_____   _____   _____

To Simplify or Not To Simplify?

Tell whether each fraction below is in simplest form. If a fraction is in simplest form, write *Simplest form*. If a fraction is not in simplest form, write it in simplest form.

1. $\dfrac{4}{8}$ _____	**2.** $\dfrac{10}{12}$ _____	**3.** $\dfrac{4}{5}$ _____	
4. $\dfrac{9}{10}$ _____	**5.** $\dfrac{2}{3}$ _____	**6.** $\dfrac{19}{100}$ _____	
7. $\dfrac{6}{8}$ _____	**8.** $\dfrac{1}{6}$ _____	**9.** $\dfrac{7}{12}$ _____	
10. $\dfrac{5}{12}$ _____	**11.** $\dfrac{4}{6}$ _____	**12.** $\dfrac{3}{4}$ _____	
13. $\dfrac{2}{5}$ _____	**14.** $\dfrac{2}{8}$ _____	**15.** $\dfrac{5}{8}$ _____	
16. $\dfrac{3}{10}$ _____	**17.** $\dfrac{47}{100}$ _____	**18.** $\dfrac{4}{12}$ _____	

19. **Write Math** ▶ Describe how you determined which fractions were already in simplest form.

_____

_____

_____

Name _____

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 $\frac{7}{10}$

_____

Common Denominator Combos

For each group of fractions below, find a common denominator. Then write the group of fractions as a group of fractions with a common denominator.

Fractions	Common Denominator	Equivalent Fractions
1. $\dfrac{2}{3}, \dfrac{3}{4}, \dfrac{5}{6}$	_____	_____
2. $\dfrac{5}{8}, \dfrac{1}{3}, \dfrac{1}{2}$	_____	_____
3. $\dfrac{2}{3}, \dfrac{7}{9}, \dfrac{1}{6}$	_____	_____
4. $\dfrac{4}{9}, \dfrac{5}{6}, \dfrac{1}{4}$	_____	_____
5. $\dfrac{1}{5}, \dfrac{2}{3}, \dfrac{1}{2}, \dfrac{5}{6}$	_____	_____

6. **Write Math** ▸ Compare the processes for finding common denominators for two, three, and four fractions.

_____

_____

_____

_____

_____

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 of 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?

Factors, Fractions, and Fruit

Callie is starting a fruit basket business. The largest fruit basket will contain 30 pieces of fruit. Other baskets may contain fewer, but at least 12, pieces of fruit. In every basket, $\frac{1}{2}$ of the pieces of fruit must be apples, $\frac{1}{3}$ must be oranges, and $\frac{1}{6}$ must be bananas. What combinations of pieces of fruit represent all the possible fruit baskets Callie can make?

Fill in the table to solve the problem.

Total Pieces of Fruit in Basket	Common Denominator	Fractions	Combination of Fruit
1. _____	_____	_____	_____ _____
2. _____	_____	_____	_____ _____
3. _____	_____	_____	_____ _____
4. _____	_____	_____	_____ _____

5. [Write Math] There is a pattern in the combinations as the total number of pieces of fruit increases. Describe any patterns you notice.

_____

_____

_____

_____

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. $\frac{3}{6}$ ● $\frac{2}{3}$

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

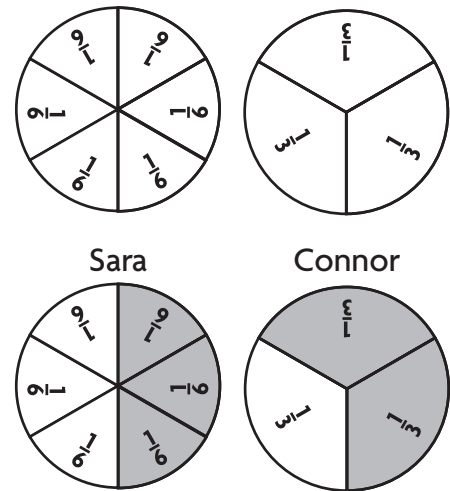**Step 2** Shade $\frac{3}{6}$ of the first circle. How many parts will you shade? **3 parts**

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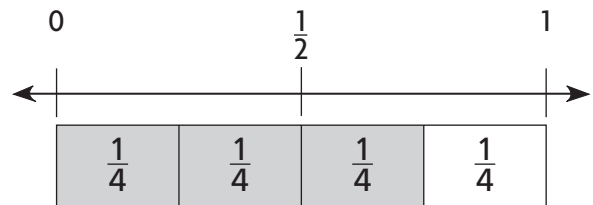
Sara   Connor

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 $>$.

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

| $\frac{1}{8}$ | $\frac{1}{8}$ | $\frac{1}{8}$ | $\frac{1}{8}$ | $\frac{1}{8}$ | $\frac{1}{8}$ | $\frac{1}{8}$ | $\frac{1}{8}$ |

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

| $\frac{1}{4}$ | $\frac{1}{4}$ | $\frac{1}{4}$ | $\frac{1}{4}$ |
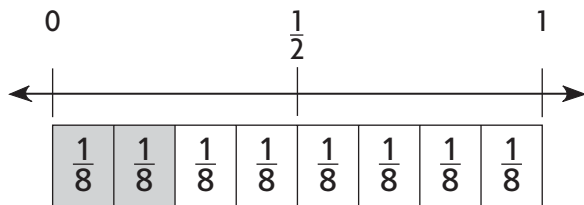
$\frac{2}{8}$ ⃝< $\frac{3}{4}$

Compare. Write $<$ or $>$.

2. $\frac{1}{4}$ ⃝ $\frac{8}{10}$

3. $\frac{7}{8}$ ⃝ $\frac{1}{3}$

4. $\frac{5}{12}$ ⃝ $\frac{1}{2}$

5. $\frac{2}{8}$ ⃝ $\frac{8}{12}$

6. $\frac{4}{6}$ ⃝ $\frac{4}{8}$

7. $\frac{7}{12}$ ⃝ $\frac{2}{4}$

Name

At the Pet Store

Use the table for 1–8.

Types of Pets in the Pet Store					
Pets	Puppies	Fish	Turtles	Parakeets	Rabbits
Fraction of Total Number of Pets	$\frac{1}{4}$	$\frac{1}{3}$	$\frac{1}{12}$	$\frac{1}{6}$	$\frac{2}{12}$

1. The pet store has the same number of which two animals?

2. Are there more puppies or more fish?

3. Are there more parakeets or more turtles?

4. Are there more puppies or more rabbits?

5. Are there more turtles or more rabbits?

6. The pet store has the most of which animal?

7. The pet store has the fewest of which animal?

8. Are there more fish or more turtles?

9. Stretch Your Thinking Suppose a pet store owner has 12 pets and wants $\frac{1}{2}$ of the total number of pets to be fish. How many fish does the owner need? Explain how you know.

Name _____

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.

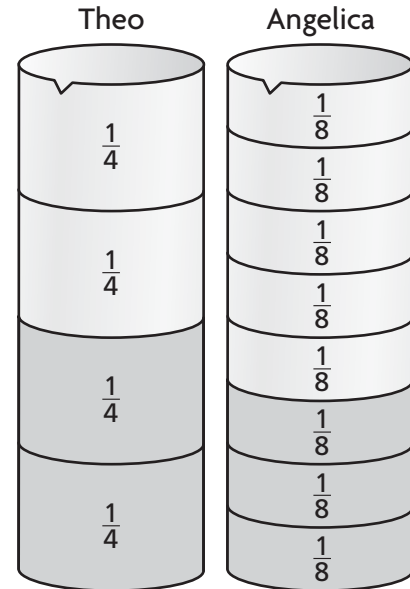**Step 2** Shade $\frac{2}{4}$ of the first beaker.

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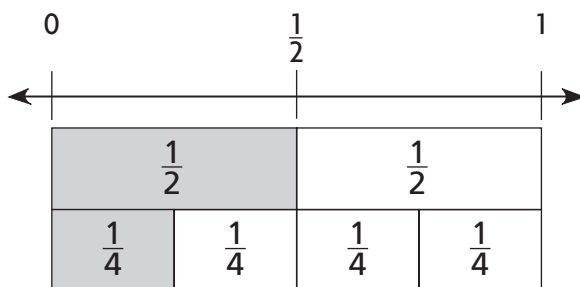
$\frac{2}{4}$ is greater than $\frac{3}{8}$.

$\frac{2}{4}$ ⬧$>$⬧ $\frac{3}{8}$
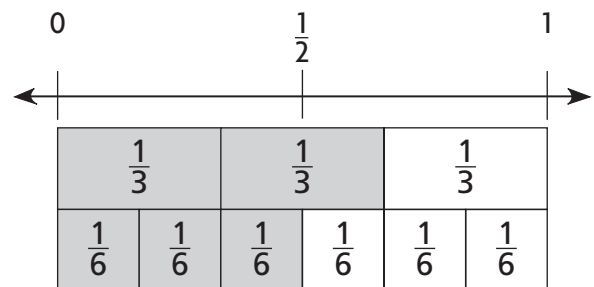
So, __Theo's__ beaker has more water.

Theo   Angelica

Theo: $\frac{1}{4}$, $\frac{1}{4}$, $\frac{1}{4}$, $\frac{1}{4}$

Angelica: $\frac{1}{8}$, $\frac{1}{8}$, $\frac{1}{8}$, $\frac{1}{8}$, $\frac{1}{8}$, $\frac{1}{8}$, $\frac{1}{8}$, $\frac{1}{8}$

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

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

| $\frac{1}{2}$ | | $\frac{1}{2}$ | |
| $\frac{1}{4}$ | $\frac{1}{4}$ | $\frac{1}{4}$ | $\frac{1}{4}$ |

Which is greater? _____

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

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

| $\frac{1}{3}$ | | $\frac{1}{3}$ | | $\frac{1}{3}$ | |
| $\frac{1}{6}$ | $\frac{1}{6}$ | $\frac{1}{6}$ | $\frac{1}{6}$ | $\frac{1}{6}$ | $\frac{1}{6}$ |

Which is less? _____

Compare. Write $<$, $>$, or $=$.

3. $\frac{1}{2}$ ◯ $\frac{3}{4}$

4. $\frac{6}{12}$ ◯ $\frac{5}{8}$

5. $\frac{2}{3}$ ◯ $\frac{4}{6}$

6. $\frac{3}{8}$ ◯ $\frac{1}{4}$

Parts of a Project

For a project, Damian, Tim, and Keisha split the work. Damian completed $\frac{1}{6}$ of the project, Keisha completed $\frac{7}{12}$ of the project, and Tim completed $\frac{1}{4}$ of the project. Who completed the greatest part, the second greatest part, and the least part of the project?

1. Fill in the table to solve the problem.

Name	Fraction of the Project	Common Denominator	Fraction with Common Denominator
Damian	$\frac{1}{6}$		
Keisha	$\frac{7}{12}$		
Tim	$\frac{1}{4}$		

2. Write the fractions in order from greatest to least.

_____

3. Write the names of the students in the order starting with who completed the greatest part of the project to who completed the least part of the project.

_____

4. ⬛ Write Math ▸ There is a relationship between all of the numerators in the fractions with the common denominator. Describe the relationship.

_____

_____

_____

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

_____   _____   _____

Filling Cups

Leo, Steve, and Isabelle each have identical cups to fill with water. Leo fills his cup $\frac{3}{4}$ full, and Steve fills his cup $\frac{2}{5}$ full. Isabelle is asked to fill her cup so that the amount of water in her cup is between the amounts of water in Leo's and Steve's cups. What could be the amount of water Isabelle puts in her cup?

Fill in the table to solve the problem.

Name	Fraction of Cup Filled	Common Denominator	Fraction with Common Denominator
Leo	$\frac{3}{4}$		
Steve	$\frac{2}{5}$		

1. Write the fractions in order from least to greatest.

   _____

2. Use your common denominator. What fractions with this denominator are between $\frac{3}{4}$ and $\frac{2}{5}$?

   _____

3. Can Isabelle use these fractions to decide how much water to put in her cup?

   _____

   _____

4. **Stretch Your Thinking** How can you find a fraction between the fractions $\frac{14}{20}$ and $\frac{15}{20}$?

   _____