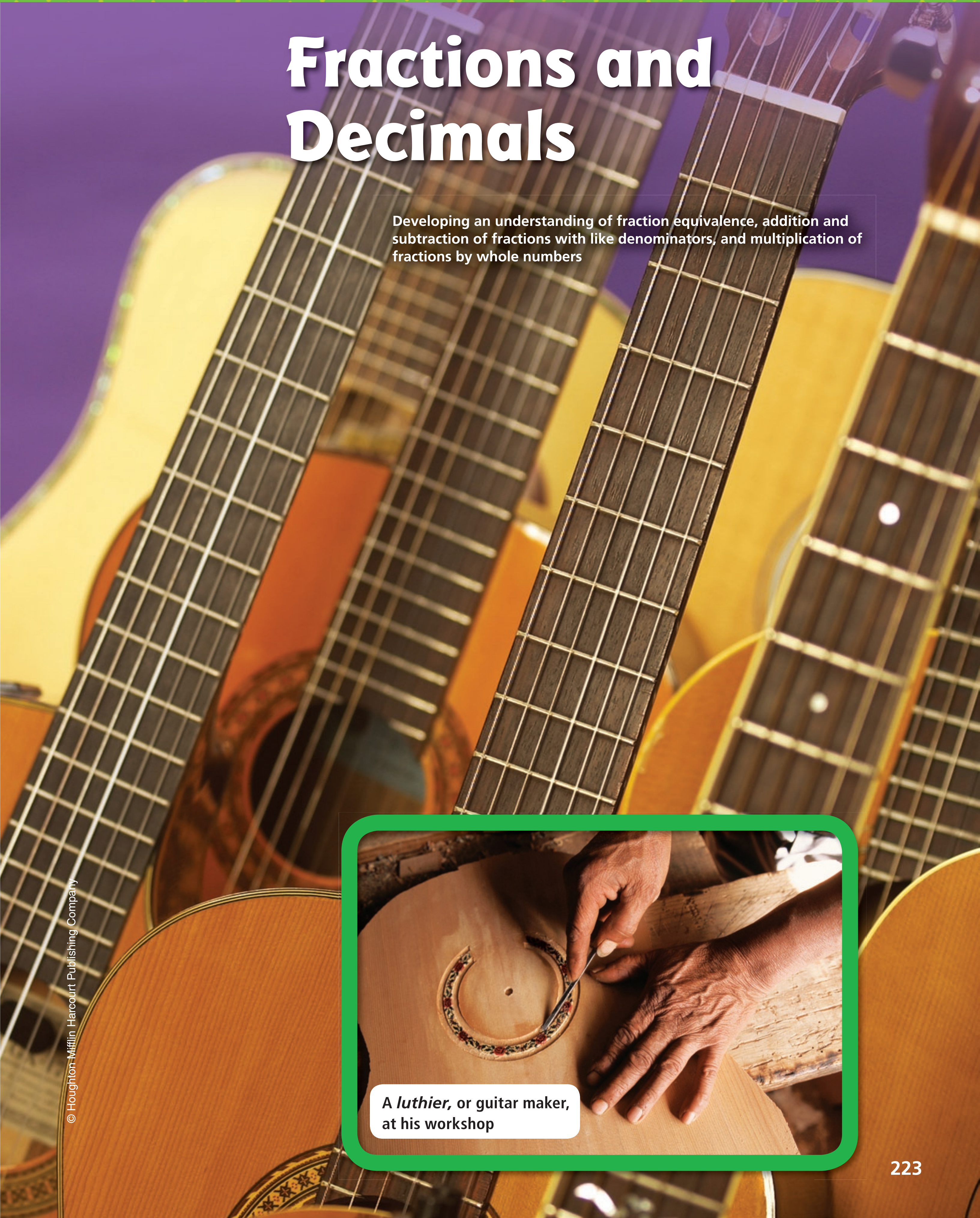
Fractions and Decimals

Developing an understanding of fraction equivalence, addition and subtraction of fractions with like denominators, and multiplication of fractions by whole numbers



A *luthier,* or guitar maker, at his workshop

Project

Building Custom Guitars

Do you play the guitar, or would you like to learn how to play one? The guitar size you need depends on your height to the nearest inch and on *scale length*. Scale length is the distance from the *bridge* of the guitar to the *nut*.

Get Started

Order the guitar sizes from the least size to the greatest size, and complete the table.

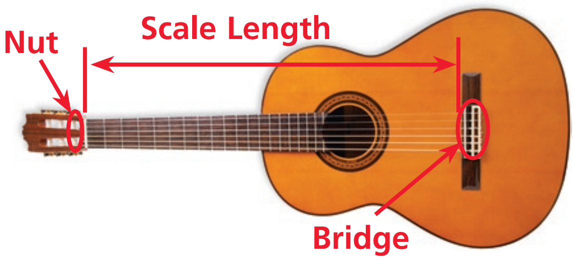
Important Facts

Guitar Sizes for Students

Age of Player	Height of Player (to nearest inch)	Scale Length (shortest to longest, in inches)	Size of Guitar
4–6	3 feet 3 inches to 3 feet 9 inches	19	
6–8	3 feet 10 inches to 4 feet 5 inches	20.5	
8–11	4 feet 6 inches to 4 feet 11 inches	22.75	
11–Adult	5 feet or taller	25.5	

Size of Guitar: $\frac{1}{2}$ size, $\frac{4}{4}$ size, $\frac{1}{4}$ size, $\frac{3}{4}$ size

Adults play $\frac{4}{4}$-size guitars. You can see that guitars also come in $\frac{3}{4}$, $\frac{1}{2}$, and $\frac{1}{4}$ sizes. Figure out which size guitar you would need according to your height and the scale length for each size guitar. Use the Important Facts to decide. **Explain** your thinking.



____

____

Completed by ____________________

Chapter 6 Fraction Equivalence and Comparison

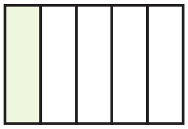
Show What You Know

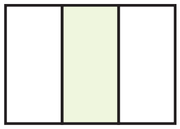
Check your understanding of important skills.

Name ______________________________

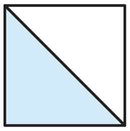
▶ Part of a Whole Write a fraction for the shaded part.

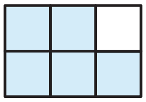
1.  ______

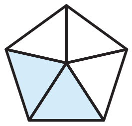
2.  ______

3.  ______

▶ Name the Shaded Part Write a fraction for the shaded part.

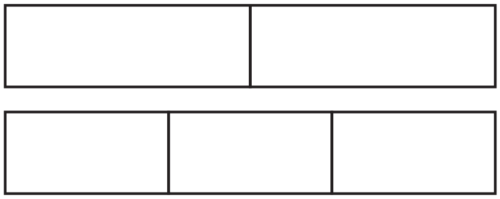
4.  ______

5.  ______

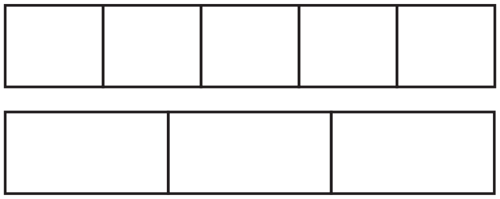
6.  ______

▶ Compare Parts of a Whole Color the fraction strips to show the fractions. Circle the greater fraction.

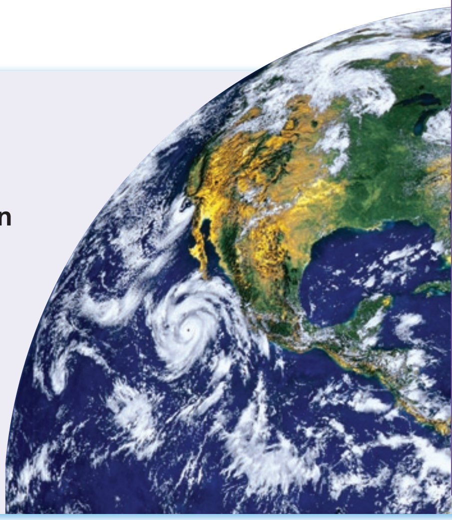
7. $\frac{1}{2}$ $\frac{1}{3}$



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



Earth's surface is covered by more than 57 million square miles of land. The table shows about how much of Earth's land surface each continent covers. Be a Math Detective. Which continent covers the greatest part of Earth's land surface?



Continent	Part of Land Surface
Asia	$\frac{3}{10}$
Africa	$\frac{1}{5}$
Antarctica	$\frac{9}{100}$
Australia	$\frac{6}{100}$
Europe	$\frac{7}{100}$
North America	$\frac{1}{6}$
South America	$\frac{1}{8}$

Vocabulary Builder

▶ Visualize It

Complete the flow map by using the words with a ✓.

Whole Numbers and Fractions

What is it?		What are some examples?
______________	→	6: 1, 2, 3, 6
______________	→	6: 6, 12, 18, 24, ...
______________	→	$\frac{1}{6}, \frac{2}{3}, \frac{4}{5}$
______________	→	$\frac{1}{3}$
______________	→	$\frac{1}{3}$

Review Words

- common multiple
- ✓ denominator
- ✓ factor
- ✓ fraction
- ✓ multiple
- ✓ numerator

Preview Words

- benchmark
- common denominator
- equivalent fractions
- simplest form

▶ Understand Vocabulary

Complete the sentences by using preview words.

1. A fraction is in ______________________ if the numerator and denominator have only 1 as a common factor.
2. ______________________ name the same amount.
3. A ______________________ is a common multiple of two or more denominators.
4. A ______________________ is a known size or amount that helps you understand a different size or amount.

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Name ______________________________

Equivalent Fractions

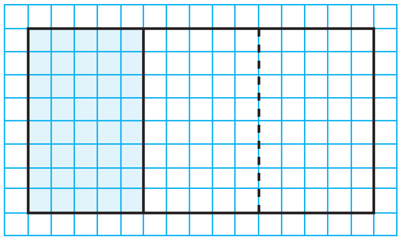
Essential Question How can you use models to show equivalent fractions?

Investigate

Materials ■ color pencils

Joe cut a pan of brownies into third-size pieces. He kept $\frac{1}{3}$ and gave the rest away. Joe will not eat his part all at once. How can he cut his part into smaller, equal-size pieces?

A. Draw on the model to show how Joe could cut his part of the brownies into 2 equal pieces.



You can rename these 2 equal pieces as a fraction of the original pan of brownies.

Suppose Joe had cut the original pan of brownies into equal pieces of this size.

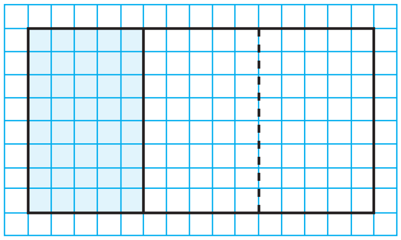
How many pieces would there be? ______

What fraction of the pan is 1 piece? ______

What fraction of the pan is 2 pieces? ______

You can rename $\frac{1}{3}$ as ______.

B. Now draw on the model to show how Joe could cut his part of the brownies into 4 equal pieces.



You can rename these 4 equal pieces as a fraction of the original pan of brownies.

Suppose Joe had cut the original pan of brownies into equal pieces of this size.

How many pieces would there be? ______

What fraction of the pan is 1 piece? ______

What fraction of the pan is 4 pieces? ______

You can rename $\frac{1}{3}$ as ______.

C. Fractions that name the same amount are **equivalent fractions**. Write the equivalent fractions.

$\frac{1}{3} = \frac{\square}{\square} = \frac{\square}{\square}$

Draw Conclusions

1. Compare the models for $\frac{1}{3}$ and $\frac{2}{6}$. How does the number of parts relate to the sizes of the parts?

2. **Describe** how the numerators are related and how the denominators are related in $\frac{1}{3} = \frac{2}{6}$.

3. H.O.T. **Apply** Does $\frac{1}{3} = \frac{3}{9}$? **Explain**.

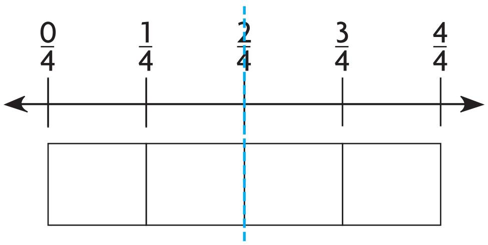
Make Connections

Savannah has $\frac{2}{4}$ yard of ribbon, and Lin has $\frac{3}{8}$ yard of ribbon. How can you determine whether Savannah and Lin have the same length of ribbon?

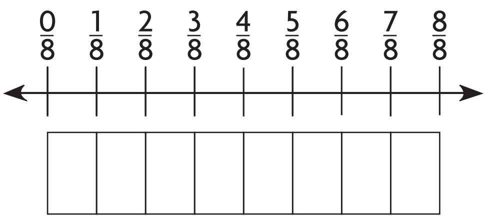
The equal sign $(=)$ and not equal to sign $(\neq)$ show whether fractions are equivalent.

Tell whether $\frac{2}{4}$ and $\frac{3}{8}$ are equivalent. Write $=$ or $\neq$.

STEP 1 Shade the amount of ribbon Savannah has.



STEP 2 Shade the amount of ribbon Lin has.



Think: $\frac{2}{4}$ yard is not the same amount as $\frac{3}{8}$ yard.

So, $\frac{2}{4}$ ◯ $\frac{3}{8}$.

MATHEMATICAL PRACTICES

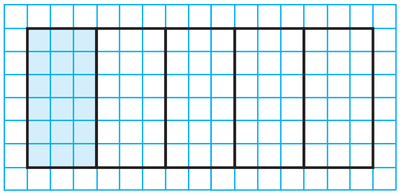
Math Talk How could you use a model to show that $\frac{4}{8} = \frac{1}{2}$?

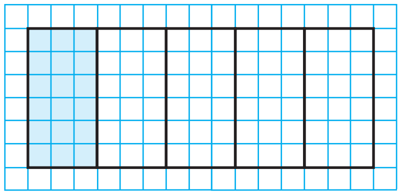
Name ____________________

Share and Show MATH BOARD

Use the model to write an equivalent fraction.

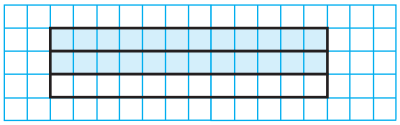
1.

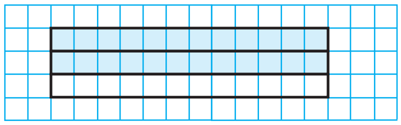




$\frac{1}{5}$ = ____

2.





$\frac{2}{3}$ = ____

Tell whether the fractions are equivalent. Write = or ≠.

3. $\frac{1}{6}$ ◯ $\frac{2}{12}$

4. $\frac{2}{5}$ ◯ $\frac{6}{10}$

5. $\frac{4}{12}$ ◯ $\frac{1}{3}$

6. $\frac{5}{8}$ ◯ $\frac{2}{4}$

7. $\frac{5}{6}$ ◯ $\frac{10}{12}$

8. $\frac{1}{2}$ ◯ $\frac{5}{10}$

9. **Write Math** Manny used 8 tenth-size parts to model $\frac{8}{10}$. Ana used fewer parts to model an equivalent fraction. How does the size of a part in Ana's model compare to the size of a tenth-size part? **Explain**.

____

____

____

10. H.O.T. How many eighth-size parts do you need to model $\frac{3}{4}$? **Explain**.

____

____

11. **Test Prep** Which fraction is equivalent to $\frac{3}{5}$?

Ⓐ $\frac{6}{8}$ Ⓑ $\frac{5}{3}$ Ⓒ $\frac{5}{10}$ Ⓓ $\frac{6}{10}$

Problem Solving

H.O.T. What's the Error?

12. Ben brought two pizzas to a party. He says that since $\frac{1}{4}$ of each pizza is left, the same amount of each pizza is left. What is his error?

Describe Ben's error.

Draw models of 2 pizzas with a different number of equal pieces. Use shading to show $\frac{1}{4}$ of each pizza.

FOR MORE PRACTICE:
Standards Practice Book, pp. P113–P114

Name ______________________________

Generate Equivalent Fractions

Essential Question How can you use multiplication to find equivalent fractions?

UNLOCK the Problem REAL WORLD

Patty needs $\frac{3}{4}$ cup of dish soap to make homemade bubble solution. Her measuring cup is divided into eighths. What fraction of the measuring cup should Patty fill with dish soap?

- Is an eighth-size part of a measuring cup bigger or smaller than a fourth-size part?

____

Find how many eighths are in $\frac{3}{4}$.

STEP 1 Compare fourths and eighths.

Shade to model $\frac{1}{4}$.
Use fourth-size parts.

1 part

Shade to model $\frac{1}{4}$.
Use eighth-size parts.

2 parts

You need ______ eighth-size parts to make 1 fourth-size part.

STEP 2 Find how many eighths you need to make 3 fourths.

Shade to model $\frac{3}{4}$.
Use fourth-size parts.

3 parts

Shade to model $\frac{3}{4}$.
Use eighth-size parts.

6 parts

You needed 2 eighth-size parts to make 1 fourth-size part.

So, you need ______ eighth-size parts to make 3 fourth-size parts.

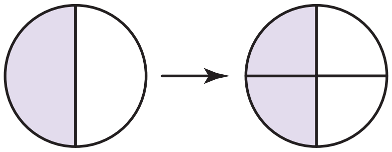
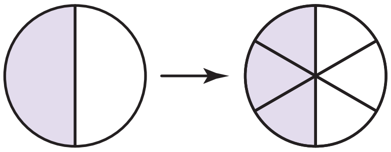
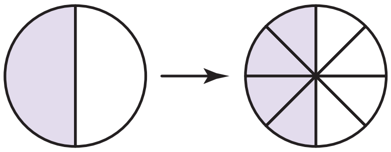
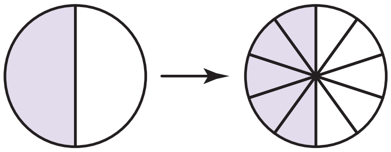
So, Patty should fill $\frac{\square}{8}$ of the measuring cup with dish soap.

Math Talk MATHEMATICAL PRACTICES How did you know how many eighth-size parts you needed to make 1 fourth-size part? **Explain**.

1. **Explain** why 6 eighth-size parts is the same amount as 3 fourth-size parts.

____

Example Write four fractions that are equivalent to $\frac{1}{2}$.

MODEL	WRITE EQUIVALENT FRACTIONS	RELATE EQUIVALENT FRACTIONS
	$\frac{1}{2} = \frac{2}{4}$	$\frac{1 \times 2}{2 \times 2} = \frac{2}{4}$
	$\frac{1}{2} = \frac{\square}{6}$	$\frac{1 \times \square}{2 \times 3} = \frac{\square}{6}$
	$\frac{1}{2} = \frac{\square}{\square}$	$\frac{1 \times \square}{2 \times \square} = \frac{\square}{\square}$
	$\frac{1}{2} = \frac{\square}{\square}$	$\frac{1 \times \square}{2 \times \square} = \frac{\square}{\square}$

So, $\frac{1}{2} = \frac{2}{4} = \frac{\square}{6} = \frac{\square}{\square} = \frac{\square}{\square}$.

2. Look at the model that shows $\frac{1}{2} = \frac{3}{6}$. How does the number of parts in the whole affect the number of parts that are shaded? **Explain**.

3. **Explain** how you can use multiplication to write a fraction that is equivalent to $\frac{3}{5}$.

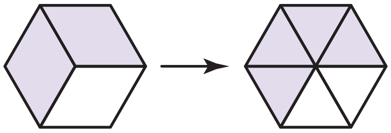
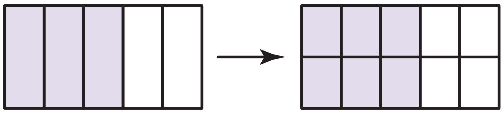
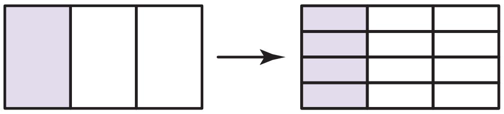
4. Are $\frac{2}{3}$ and $\frac{6}{8}$ equivalent? **Explain**.

Name ______________________________

Share and Show

MATH BOARD

1. Complete the table below.

MODEL	WRITE EQUIVALENT FRACTIONS	RELATE EQUIVALENT FRACTIONS
	$\frac{2}{3} = \frac{4}{6}$	$\frac{2 \times \square}{3 \times \square} = \frac{\square}{\square}$
	$\frac{3}{5} = \frac{6}{10}$	$\frac{3 \times \square}{5 \times \square} = \frac{\square}{\square}$
	$\frac{1}{3} = \frac{4}{12}$	$\frac{1 \times \square}{3 \times \square} = \frac{\square}{\square}$

Math Talk MATHEMATICAL PRACTICES Can you multiply the numerator and denominator of a fraction by 0? **Explain**.

Write two equivalent fractions.

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

$\frac{4}{5} = \frac{4 \times \square}{5 \times \square} = \frac{\square}{\square}$

$\frac{4}{5} = \frac{4 \times \square}{5 \times \square} = \frac{\square}{\square}$

$\frac{4}{5} = \frac{\square}{\square} = \frac{\square}{\square}$

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

$\frac{2}{4} = \frac{2 \times \square}{4 \times \square} = \frac{\square}{\square}$

$\frac{2}{4} = \frac{2 \times \square}{4 \times \square} = \frac{\square}{\square}$

$\frac{2}{4} = \frac{\square}{\square} = \frac{\square}{\square}$

On Your Own

Write two equivalent fractions.

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

$\frac{3}{6} = \frac{\square}{\square} = \frac{\square}{\square}$

5. $\frac{3}{10}$

$\frac{3}{10} = \frac{\square}{\square} = \frac{\square}{\square}$

6. $\frac{2}{5}$

$\frac{2}{5} = \frac{\square}{\square} = \frac{\square}{\square}$

Tell whether the fractions are equivalent. Write = or ≠.

7. $\frac{5}{6} \bigcirc \frac{10}{18}$

8. $\frac{4}{5} \bigcirc \frac{8}{10}$

9. $\frac{1}{5} \bigcirc \frac{4}{10}$

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

Problem Solving REAL WORLD

Use the recipe for 11–13.

Face Paint Recipe

$\frac{2}{8}$ cup cornstarch

1 tablespoon flour

$\frac{9}{12}$ cup light corn syrup

$\frac{1}{4}$ cup water

$\frac{1}{2}$ teaspoon food coloring

11. How could you use a $\frac{1}{8}$-cup measuring cup to measure the cornstarch?

12. How could you use a $\frac{1}{8}$-cup measuring cup to measure the water?

13. H.O.T. Kim says the amount of flour in the recipe can be expressed as a fraction. Is she correct? **Explain**.

14. Write Math **Explain** using words how you know a fraction is equivalent to another fraction.

15. **Test Prep** Raul needs a piece of rope $\frac{2}{3}$ yard long. Which fraction is equivalent to $\frac{2}{3}$?

Ⓐ $\frac{8}{15}$ yard

Ⓑ $\frac{6}{12}$ yard

Ⓒ $\frac{8}{12}$ yard

Ⓓ $\frac{4}{5}$ yard

SHOW YOUR WORK

FOR MORE PRACTICE:
Standards Practice Book, pp. P115–P116

Name ______________________________

Simplest Form

Essential Question How can you write a fraction as an equivalent fraction in simplest form?

UNLOCK the Problem REAL WORLD

Vicki bought an ice cream cake cut into 6 equal pieces. Vicki, Margo, and Elena each took 2 pieces of the cake home. Vicki says she and each of her friends took $\frac{1}{3}$ of the cake home. Is Vicki correct?

- Into how many pieces was the cake cut?

____

- How many pieces did each girl take?

____

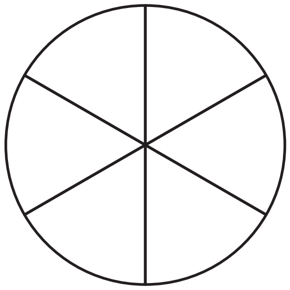
Activity

Materials ■ color pencils

STEP 1 Use a blue pencil to shade the pieces Vicki took home.

STEP 2 Use a red pencil to shade the pieces Margo took home.

STEP 3 Use a yellow pencil to shade the pieces Elena took home.



The cake is divided into ______ equal-size pieces. The 3 colors on the model show how to combine sixth-size pieces to make

______ equal third-size pieces.

So, Vicki is correct. Vicki, Margo, and Elena each took $\frac{\square}{\square}$ of the cake home.

Math Talk MATHEMATICAL PRACTICES Compare the models for $\frac{2}{6}$ and $\frac{1}{3}$. **Explain** how the sizes of the parts are related.

- **What if** Vicki took 3 pieces of cake home and Elena took 3 pieces of cake home. How could you combine the pieces to write a fraction that represents the part each friend took home? **Explain**.

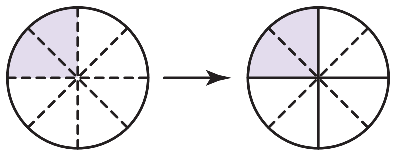
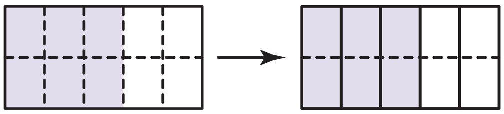
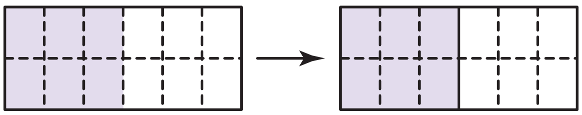
____

____

____

Simplest Form A fraction is in **simplest form** when you can represent it using as few equal parts of a whole as possible. You need to describe the part you have in equal-size parts. If you can't describe the part you have using fewer parts, then you cannot simplify the fraction.

One Way **Use models to write an equivalent fraction in simplest form.**

MODEL	WRITE EQUIVALENT FRACTIONS	RELATE EQUIVALENT FRACTIONS
	$\frac{2}{8} = \frac{1}{4}$	$\frac{2 \div 2}{8 \div 2} = \frac{1}{4}$
	$\frac{6}{10} = \frac{\square}{5}$	$\frac{6 \div \square}{10 \div \square} = \frac{\square}{5}$
	$\frac{6}{12} = \frac{\square}{\square}$	$\frac{6 \div \square}{12 \div \square} = \frac{\square}{\square}$

To simplify $\frac{6}{10}$, you can combine tenth-size parts into equal groups with 2 parts each.

So, $\frac{6}{10} = \frac{6 \div \square}{10 \div \square} = \frac{\square}{\square}$.

Another Way **Use common factors to write $\frac{6}{10}$ in simplest form.**

A fraction is in simplest form when 1 is the only factor that the numerator and denominator have in common. The parts of the whole cannot be combined into fewer equal-size parts to show the same fraction.

STEP 1 List the factors of the numerator and denominator. Circle common factors.

Factors of 6: ______, ______, ______, ______

Factors of 10: ______, ______, ______, ______

STEP 2 Divide the numerator and denominator by a common factor greater than 1.

$\frac{6}{10} = \frac{6 \div \square}{10 \div \square} = \frac{\square}{\square}$

Since 1 is the only factor that 3 and 5 have in common, ______ is written in simplest form.

Name ______________________________

Share and Show MATH BOARD

1. Write $\frac{8}{10}$ in simplest form.

$$\frac{8}{10} = \frac{8 \div \square}{10 \div \square} = \frac{\square}{\square}$$

Write the fraction in simplest form.

2. $\frac{6}{12}$ ______

3. $\frac{2}{10}$ ______

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

5. $\frac{4}{6}$ ______

MATHEMATICAL PRACTICES

Math Talk **Explain** how you know a fraction is in simplest form.

On Your Own

Write the fraction in simplest form.

6. $\frac{9}{12}$ ______

7. $\frac{4}{8}$ ______

8. $\frac{10}{12}$ ______

9. $\frac{20}{100}$ ______

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

10. $\frac{2}{8}$ ______

11. $\frac{9}{12}$ ______

12. $\frac{5}{6}$ ______

13. $\frac{4}{10}$ ______

Tell whether the fractions are equivalent.
Write $=$ or $\neq$. Use simplest form to help.

14. $\frac{3}{6} \bigcirc \frac{5}{10}$

15. $\frac{9}{12} \bigcirc \frac{1}{3}$

16. $\frac{3}{12} \bigcirc \frac{2}{4}$

17. $\frac{6}{8} \bigcirc \frac{9}{12}$

Problem Solving REAL WORLD

Use the map for 18–19.

18. What fraction of the states in the southwest region share a border with Mexico? Is this fraction in simplest form?

19. H.O.T. **What's the Question?** $\frac{1}{3}$ of the states in this region are on the Gulf of Mexico.

20. **Sense or Nonsense?** Pete says that to write $\frac{4}{6}$ as $\frac{2}{3}$, you combine pieces, but to write $\frac{4}{6}$ as $\frac{8}{12}$, you break apart pieces. Does this make sense? **Explain**.

21. **Test Prep** Eight of 12 students bought lunch today. In simplest form, what fraction of the students bought lunch today?

Ⓐ $\frac{4}{6}$

Ⓑ $\frac{2}{3}$

Ⓒ $\frac{10}{12}$

Ⓓ $\frac{12}{12}$

SHOW YOUR WORK

Name ____________________

Common Denominators

Essential Question How can you write a pair of fractions as fractions with a common denominator?

UNLOCK the Problem REAL WORLD

Martin has two cakes that are the same size. One cake is cut into $\frac{1}{2}$-size pieces. The other cake is cut into $\frac{1}{3}$-size pieces. He wants to cut the cakes so they have the same size pieces. How can he cut each cake?

A **common denominator** is a common multiple of the denominators of two or more fractions. Fractions with common denominators represent wholes cut into the same number of pieces.

Activity Use paper folding and shading.

Materials ■ 2 sheets of paper

Find a common denominator for $\frac{1}{2}$ and $\frac{1}{3}$.

STEP 1

Model the cake cut into $\frac{1}{2}$-size pieces. Fold one sheet of paper in half. Draw a line on the fold.

STEP 2

Model the cake cut into $\frac{1}{3}$-size pieces. Fold the other sheet of paper into thirds. Draw lines on the folds.

STEP 3

Fold each sheet of paper so that both sheets have the same number of parts. Draw lines on the folds. How many equal parts does each sheet of paper have? ____________

STEP 4

Draw a picture of your sheets of paper to show how many pieces each cake could have.

So, each cake could be cut into ______ pieces.

MATHEMATICAL PRACTICES

Math Talk Does Martin need to cut each cake the same number of times? **Explain**.

Example Write $\frac{4}{5}$ and $\frac{1}{2}$ as a pair of fractions with common denominators.

You can use common multiples to find a common denominator. List multiples of each denominator. A common multiple can be used as a common denominator.

STEP 1 List multiples of 5 and 2. Circle common multiples.

5: 5, 10, ____, ____, ____, ____

2: ____, ____, ____, ____, ____, ____

STEP 2 Write equivalent fractions.

$$\frac{4}{5} = \frac{4 \times \square}{5 \times \square} = \frac{\square}{10}$$

$$\frac{1}{2} = \frac{1 \times \square}{2 \times \square} = \frac{\square}{10}$$

Choose a denominator that is a common multiple of 5 and 2.

You can write $\frac{4}{5}$ and $\frac{1}{2}$ as ____ and ____.

ERROR Alert

Remember that when you multiply the denominator by a factor, you must multiply the numerator by the same factor to write an equivalent fraction.

1. Are $\frac{4}{5}$ and $\frac{1}{2}$ equivalent? **Explain**.

____

____

____

2. **Describe** another way you could tell whether $\frac{4}{5}$ and $\frac{1}{2}$ are equivalent.

____

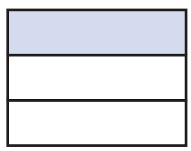
____

____

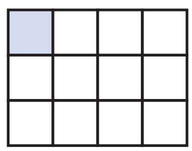
Share and Show MATH BOARD

1. Find a common denominator for $\frac{1}{3}$ and $\frac{1}{12}$ by dividing each whole into the same number of equal parts. Use the models to help.

common denominator: ____



$\frac{1}{3}$



$\frac{1}{12}$

Name ______________________________

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

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

____

3. $\frac{3}{4}$ and $\frac{5}{8}$

____

4. $\frac{1}{3}$ and $\frac{1}{4}$

____

5. $\frac{4}{12}$ and $\frac{5}{8}$

____

MATHEMATICAL PRACTICES

Math Talk **Explain** how using a model or listing multiples helps you find a common denominator.

On Your Own

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

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

____

7. $\frac{3}{5}$ and $\frac{4}{10}$

____

Tell whether the fractions are equivalent. Write = or ≠.

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

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

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

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

12. $\frac{1}{3} \bigcirc \frac{2}{6}$

13. $\frac{1}{3} \bigcirc \frac{4}{12}$

14. $\frac{2}{6} \bigcirc \frac{4}{12}$

15. $\frac{4}{12} \bigcirc \frac{4}{12}$

Problem Solving REAL WORLD

16. **Sense or Nonsense?** Carrie has a red streamer that is $\frac{3}{4}$ yard long and a blue streamer that is $\frac{5}{6}$ yard long. She says the streamers are the same length. Does this make sense? **Explain**.

17. H.O.T. Leah has two same-size rectangles divided into the same number of equal parts. One rectangle has $\frac{1}{3}$ of the parts shaded, and the other has $\frac{2}{5}$ of the parts shaded. What is the least number of parts into which both rectangles could be divided?

18. H.O.T. **What's the Error?** Jonah says a common denominator for $\frac{3}{4}$ and $\frac{2}{5}$ is 9. What is Jonah's error? **Explain**.

19. **Test Prep** Kevin practiced his trumpet $\frac{2}{3}$ hour on Tuesday and $\frac{3}{4}$ hour on Thursday. Which number below is a common denominator for $\frac{2}{3}$ and $\frac{3}{4}$?

Ⓐ 2 Ⓒ 8

Ⓑ 4 Ⓓ 12

SHOW YOUR WORK

FOR MORE PRACTICE: Standards Practice Book, pp. P119–P120

Name ____________________

Problem Solving • Find Equivalent Fractions

Essential Question How can you use the strategy *make a table* to solve problems using equivalent fractions?

UNLOCK the Problem REAL WORLD

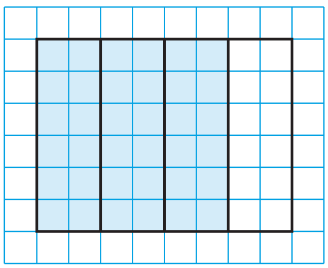
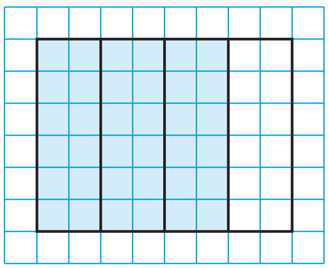
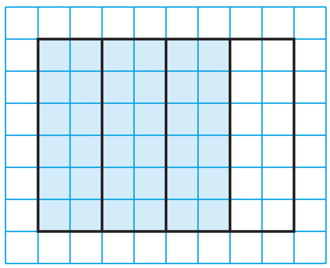
Anaya is planting a flower garden. The garden will have no more than 12 equal sections. $\frac{3}{4}$ of the garden will have daisies. What other fractions could represent the part of the garden that will have daisies?

Read the Problem

What do I need to find?	What information do I need to use?	How will I use the information?
____________ that could represent the part of the garden that will have daisies	______ of the garden will have daisies. The garden will not have more than ______ equal sections.	I can make a ____________ to find ____________ fractions to solve the problem.

Solve the Problem

I can make a table and draw models to find equivalent fractions.

$\frac{3}{4}$	$\frac{\square}{\square}$	$\frac{\square}{\square}$
		

1. What other fractions could represent the part of the garden that will have daisies? **Explain.** ____________

____

____

Math Talk MATHEMATICAL PRACTICES Compare the models of the equivalent fractions. How does the number of parts relate to the size of the parts? **Explain.**

Try Another Problem

Two friends are knitting scarves. Each scarf has 3 rectangles, and $\frac{2}{3}$ of the rectangles have stripes. If the friends are making 10 scarves, how many rectangles do they need? How many rectangles will have stripes?

Read the Problem

What do I need to find?	What information do I need to use?	How will I use the information?

Solve the Problem

2. Does your answer make sense? **Explain** how you know.

MATHEMATICAL PRACTICES

Math Talk What strategy did you use and why?

Name ______________________________

Share and Show MATH BOARD

Tips

UNLOCK the Problem

- Use the Problem Solving Mathboard.
- Underline important facts.
- Choose a strategy you know.

1. Keisha is helping plan a race route for a 10-kilometer charity run. The committee wants to set up the following things along the course.

Viewing areas: *At the end of each half of the course*
Water stations: *At the end of each fifth of the course*
Distance markers: *At the end of each tenth of the course*

Which locations have more than one thing located there?

First, make a table to organize the information.

	Number of Locations	First Location	All the Locations
Viewing Areas	2	$\frac{1}{2}$	$\frac{1}{2}$
Water Stations	5	$\frac{1}{5}$	$\frac{1}{5}$
Distance Markers	10	$\frac{1}{10}$	$\frac{1}{10}$

Next, identify a relationship. Use a common denominator, and find equivalent fractions.

Finally, identify the locations at which more than one thing will be set up. Circle the locations.

____

____

2. H.O.T. **What if** distance markers will also be placed at the end of every fourth of the course? Will any of those markers be set up at the same location as another distance marker, a water station, or a viewing area? **Explain.** ______________________________

____

____

3. Fifty-six students signed up to volunteer for the race. There were 4 equal groups of students, and each group had a different task.

How many students were in each group? ______________

On Your Own

Choose a STRATEGY

Act It Out
Draw a Diagram
Find a Pattern
Make a Table or List
Solve a Simpler Problem

4. Andy cut a tuna sandwich and a chicken sandwich into a total of 15 same-size pieces. He cut the tuna sandwich into 9 more pieces than the chicken sandwich. Andy ate 8 pieces of the tuna sandwich. What fraction of the tuna sandwich did he eat?

5. A baker cut a pie in half. He cut each half into 3 equal pieces and each piece into 2 equal slices. He sold 6 slices. What fraction of the pie did the baker sell?

SHOW YOUR WORK

6. H.O.T. Write Math Luke threw balls into these buckets at a carnival. The number on the bucket gives the number of points for each throw. What is the least number of throws needed to score exactly 100 points? **Explain**.

7. H.O.T. A number has exactly eight factors. Two of the factors are 10 and 14. What is the number, and what are all of the factors?

8. **Test Prep** A comic-book store will trade 5 of its comic books for 6 of yours. How many of its comic books will the store trade for 36 of yours?

Ⓐ 25 Ⓑ 30 Ⓒ 36 Ⓓ 42

Name ______________________________

Mid-Chapter Checkpoint

Vocabulary

Choose the best term from the box.

Vocabulary
common denominator
equivalent fractions
factor

1. ______________________ name the same amount. (p. 227)

2. A ______________________ is a common multiple of two or more denominators. (p. 239)

Concepts and Skills

Write two equivalent fractions.

3. $\frac{2}{5}$ = ______ = ______

4. $\frac{1}{3}$ = ______ = ______

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

Tell whether the fractions are equivalent. Write $=$ or $\neq$.

6. $\frac{2}{3} \bigcirc \frac{4}{12}$

7. $\frac{5}{6} \bigcirc \frac{10}{12}$

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

Write the fraction in simplest form.

9. $\frac{6}{8}$ ______________________

10. $\frac{25}{100}$ ______________________

11. $\frac{8}{10}$ ______________________

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

12. $\frac{3}{10}$ and $\frac{2}{5}$ ______________________

13. $\frac{1}{3}$ and $\frac{3}{4}$ ______________________

Fill in the bubble completely to show your answer.

14. Sam needs $\frac{5}{6}$ cup mashed bananas and $\frac{3}{4}$ cup mashed strawberries for a recipe. He wants to find whether he needs more bananas or more strawberries. How can he write $\frac{5}{6}$ and $\frac{3}{4}$ as a pair of fractions with a common denominator?

Ⓐ $\frac{5}{12}$ and $\frac{3}{12}$

Ⓑ $\frac{15}{18}$ and $\frac{15}{20}$

Ⓒ $\frac{10}{12}$ and $\frac{9}{12}$

Ⓓ $\frac{10}{12}$ and $\frac{18}{24}$

15. Karen will divide her garden into equal parts. She will plant corn in $\frac{8}{12}$ of the garden. What is the fewest number of parts she can divide her garden into?

Ⓐ 1

Ⓑ 2

Ⓒ 3

Ⓓ 4

16. Olivia is making scarves. Each scarf will have 5 rectangles, and $\frac{2}{5}$ of the rectangles will be purple. How many purple rectangles does she need for 3 scarves?

Ⓐ 5

Ⓑ 6

Ⓒ 7

Ⓓ 10

17. Paul needs to buy $\frac{5}{8}$ pound of peanuts. The scale at the store measures parts of a pound in sixteenths. Which measure is equivalent to $\frac{5}{8}$ pound?

Ⓐ $\frac{5}{16}$ pound

Ⓑ $\frac{8}{16}$ pound

Ⓒ $\frac{10}{16}$ pound

Ⓓ $\frac{15}{16}$ pound

Name ______

Compare Fractions Using Benchmarks

Essential Question How can you use benchmarks to compare fractions?

UNLOCK the Problem REAL WORLD

Zach 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, Zach used more ______.

MATHEMATICAL PRACTICES

Math Talk **Explain** how the number of eighth-size parts in $\frac{5}{8}$ is 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?

______

______

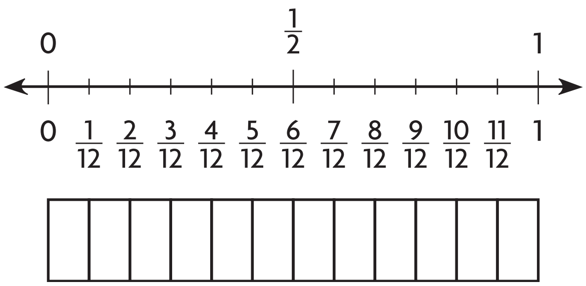
Benchmarks A **benchmark** is a known size or amount that helps you understand a different size or amount. You can use $\frac{1}{2}$ as a benchmark to help you compare fractions.

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 $\frac{1}{2}$.

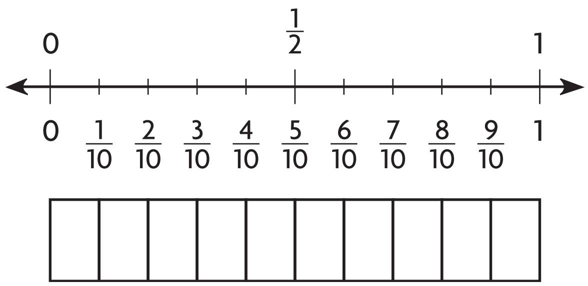
STEP 1 Compare $\frac{5}{12}$ to $\frac{1}{2}$.



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.

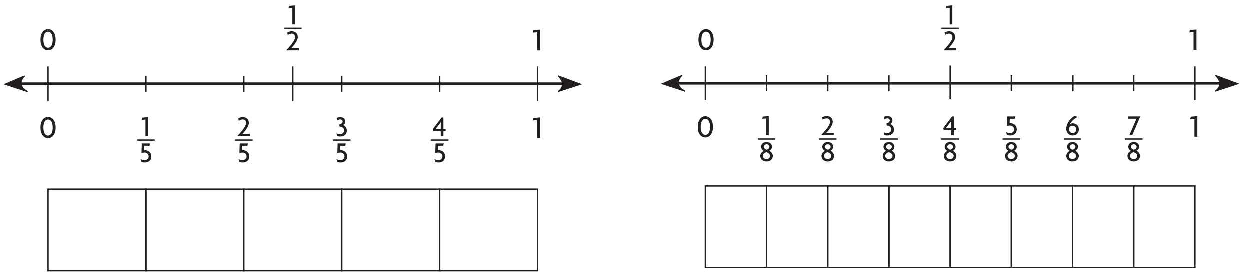
____

____

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

MATHEMATICAL PRACTICES

Math Talk **Explain** how 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. $\frac{4}{8} \bigcirc \frac{2}{10}$
10. $\frac{3}{4} \bigcirc \frac{1}{2}$
11. $\frac{6}{6} \bigcirc \frac{1}{3}$
12. $\frac{4}{5} \bigcirc \frac{1}{6}$
13. $\frac{5}{8} \bigcirc \frac{9}{10}$

H.O.T. **Algebra** **Find a numerator that makes the statement true.**

14. $\frac{2}{4} < \frac{\square}{6}$
15. $\frac{8}{10} > \frac{\square}{8}$
16. $\frac{10}{12} > \frac{\square}{4}$
17. $\frac{2}{5} < \frac{\square}{10}$

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

____

____

____

Problem Solving REAL WORLD

SHOW YOUR WORK

19. A group of students ate $\frac{5}{12}$ of a large pepperoni pizza and $\frac{8}{10}$ of a large cheese pizza. Did they eat more pepperoni pizza or cheese pizza?

____

20. Tim ran $\frac{4}{8}$ mile. Lucy ran $\frac{7}{10}$ mile.

Who ran farther? ____________

21. H.O.T. **What's the Question?** Selena ran farther than Manny.

____

____

____

22. Mary 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?

____

23. **What's the Error?** Tom has two pieces of wood to build a birdhouse. One piece is $\frac{3}{4}$ yard long. The other piece is $\frac{4}{8}$ yard long. Tom says both pieces of wood are the same length. **Explain** his error.

____

____

____

24. **Test Prep** Todd is using the benchmark $\frac{1}{2}$ to compare fractions. Which statement is NOT correct?

Ⓐ $\frac{5}{6} < \frac{1}{2}$

Ⓑ $\frac{3}{6} = \frac{1}{2}$

Ⓒ $\frac{5}{6} > \frac{1}{2}$

Ⓓ $\frac{5}{6} \neq \frac{1}{2}$

 FOR MORE PRACTICE:
Standards Practice Book, pp. P123–P124

Name ______________________________

Compare Fractions

Essential Question How can you compare fractions?

UNLOCK the Problem REAL WORLD

Every year, Avery's school has a fair. This year, $\frac{3}{8}$ of the booths had face painting and $\frac{1}{4}$ of the booths had sand art. Were there more booths with face painting or sand art?

Compare $\frac{3}{8}$ and $\frac{1}{4}$.

One Way Use a common denominator.

When two fractions have the same denominator, they have equal-size parts. You can compare the number of parts.

THINK

Think: 8 is a multiple of both 4 and 8. Use 8 as a common denominator.

$$\frac{1}{4} = \frac{1 \times \square}{4 \times \square} = \frac{\square}{8}$$

$\frac{3}{8}$ already has 8 as a denominator.

MODEL AND RECORD

Shade the model. Then compare.

$\frac{3}{8}$ ◯ $\frac{2}{8}$

Another Way Use a common numerator.

When two fractions have the same numerator, they represent the same number of parts. You can compare the size of the parts.

THINK

Think: 3 is a multiple of both 3 and 1. Use 3 as a common numerator.

$\frac{3}{8}$ already has 3 as a numerator.

$$\frac{1}{4} = \frac{1 \times \square}{4 \times \square} = \frac{3}{\square}$$

MODEL AND RECORD

Shade the model. Then compare.

$\frac{3}{8}$ ◯ $\frac{3}{12}$

Since $\frac{3}{8}$ ◯ $\frac{1}{4}$, there were more booths with ______________.

MATHEMATICAL PRACTICES

Math Talk **Explain** why you cannot use $\frac{1}{2}$ as a benchmark to compare $\frac{3}{8}$ and $\frac{1}{4}$.

Try This! Compare the fractions. Explain your reasoning.

A $\frac{3}{4}$ ◯ $\frac{1}{3}$

B $\frac{3}{5}$ ◯ $\frac{3}{8}$

C $\frac{3}{4}$ ◯ $\frac{7}{8}$

D $\frac{4}{5}$ ◯ $\frac{2}{3}$

1. Which would you use to compare $\frac{11}{12}$ and $\frac{5}{6}$, a common numerator or a common denominator? **Explain**.

2. Can you use simplest form to compare $\frac{8}{10}$ and $\frac{3}{5}$? **Explain**.

Name ____________________

Share and Show

MATH BOARD

1. Compare $\frac{2}{5}$ and $\frac{1}{10}$.

Think: Use ______ as a common denominator.

$\frac{2}{5} = \frac{\square \times \square}{\square \times \square} = \frac{\square}{\square}$

$\frac{1}{10}$

Think: 4 tenth-size parts ◯ 1 tenth-size part.

$\frac{2}{5}$ ◯ $\frac{1}{10}$

2. Compare $\frac{6}{10}$ and $\frac{3}{4}$.

Think: Use ______ as a common numerator.

$\frac{6}{10}$

$\frac{3}{4} = \frac{\square \times \square}{\square \times \square} = \frac{\square}{\square}$

Think: A tenth-size part ◯ an eighth-size part.

$\frac{6}{10}$ ◯ $\frac{3}{4}$

Compare. Write <, >, or =.

3. $\frac{7}{8}$ ◯ $\frac{2}{8}$

4. $\frac{5}{12}$ ◯ $\frac{3}{6}$

5. $\frac{4}{10}$ ◯ $\frac{4}{6}$

6. $\frac{6}{12}$ ◯ $\frac{2}{4}$

Math Talk MATHEMATICAL PRACTICES

Explain why using a common numerator or a common denominator can help you compare fractions.

On Your Own

Compare. Write <, >, or =.

7. $\frac{1}{3}$ ◯ $\frac{1}{4}$

8. $\frac{4}{5}$ ◯ $\frac{8}{10}$

9. $\frac{3}{4}$ ◯ $\frac{2}{6}$

10. $\frac{1}{2}$ ◯ $\frac{5}{8}$

11. $\frac{3}{10}$ ◯ $\frac{2}{4}$

12. $\frac{75}{100}$ ◯ $\frac{8}{10}$

13. $\frac{4}{6}$ ◯ $\frac{2}{3}$

14. $\frac{3}{10}$ ◯ $\frac{4}{100}$

H.O.T. **Algebra** Find a number that makes the statement true.

15. $\frac{1}{2} > \frac{\square}{3}$

16. $\frac{3}{10} < \frac{\square}{5}$

17. $\frac{5}{12} < \frac{\square}{3}$

18. $\frac{2}{3} > \frac{4}{\square}$

UNLOCK the Problem REAL WORLD

19. Jerry is making a strawberry smoothie. Which statement about the recipe is true?

Strawberry Smoothie

3 ice cubes

$\frac{3}{4}$ cup milk

$\frac{2}{6}$ cup cottage cheese

$\frac{8}{12}$ cup strawberries

$\frac{1}{4}$ teaspoon vanilla

$\frac{1}{8}$ teaspoon sugar

Ⓐ The amount of strawberries is greater than the amount of milk.

Ⓑ The amount of milk is less than the amount of cottage cheese.

Ⓒ The amount of strawberries is equal to the amount of cottage cheese.

Ⓓ The amount of vanilla is greater than the amount of sugar.

a. What do you need to find? ____________________

b. How will you find the answer? ____________________

____

c. Show your work.

d. Fill in the bubble for the correct answer choice above.

20. The number of floats in a parade is a prime number. Which of the following could be the number of floats?

Ⓐ 16 Ⓒ 41

Ⓑ 21 Ⓓ 60

21. A kite reached a height of $\frac{4}{12}$ mile. What is $\frac{4}{12}$ in simplest form?

Ⓐ $\frac{1}{4}$ Ⓒ $\frac{1}{3}$

Ⓑ $\frac{2}{6}$ Ⓓ $\frac{1}{2}$

 FOR MORE PRACTICE: Standards Practice Book, pp. P125–P126

Name ______________________________

Compare and Order Fractions

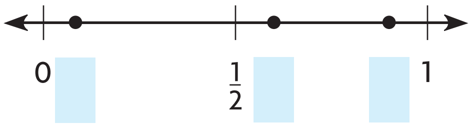
Essential Question How can you order fractions?

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.



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 $\frac{1}{2}$.

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

______ 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.

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

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.

Math Talk MATHEMATICAL PRACTICES

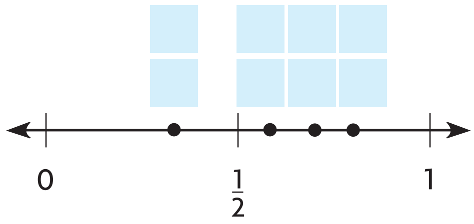
Explain how you know you located $\frac{3}{5}$ on the number line correctly.

- 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, ______ $<$ ______ $<$ ______ $<$ ______.

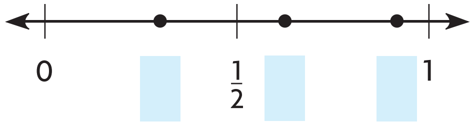
Try This! Write $\frac{3}{4}$, $\frac{3}{6}$, $\frac{1}{3}$, and $\frac{2}{12}$ in order from least to greatest.

______ $<$ ______ $<$ ______ $<$ ______

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

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 **Explain** how benchmarks can 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. $\frac{7}{100}, \frac{9}{10}, \frac{4}{5}$ ______________

H.O.T. **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. 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?

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. 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. **Test Prep** A recipe for Trail Mix includes $\frac{3}{10}$ cup of sunflower seeds, $\frac{1}{2}$ cup of raisins, and $\frac{3}{8}$ cup of granola. Which list shows the amounts from least to greatest?

Ⓐ $\frac{1}{2}$ cup, $\frac{3}{8}$ cup, $\frac{3}{10}$ cup

Ⓑ $\frac{3}{8}$ cup, $\frac{3}{10}$ cup, $\frac{1}{2}$ cup

Ⓒ $\frac{3}{10}$ cup, $\frac{3}{8}$ cup, $\frac{1}{2}$ cup

Ⓓ $\frac{3}{10}$ cup, $\frac{1}{2}$ cup, $\frac{3}{8}$ cup

FOR MORE PRACTICE:
Standards Practice Book, pp. P127–P128

Name ______________________________

Chapter Review/Test

▶ Vocabulary

Choose the best term from the box.

Vocabulary
benchmark
common denominator
numerator
simplest form

1. A ____________________ is a common multiple of two or more denominators. (p. 239)

2. A fraction is in ____________________ when the numerator and denominator have only 1 as a common factor. (p. 236)

3. A ____________________ is a known size or amount that helps you understand another size or amount. (p. 250)

▶ Concepts and Skills

Write two equivalent fractions.

4. $\frac{4}{6}$ = ______ = ______

5. $\frac{6}{10}$ = ______ = ______

6. $\frac{2}{8}$ = ______ = ______

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

7. $\frac{3}{4}$ and $\frac{7}{8}$

8. $\frac{2}{3}$ and $\frac{1}{4}$

9. $\frac{7}{10}$ and $\frac{4}{5}$

Compare. Write <, >, or =.

10. $\frac{5}{8}$ ◯ $\frac{5}{12}$

11. $\frac{10}{12}$ ◯ $\frac{5}{6}$

12. $\frac{1}{2}$ ◯ $\frac{3}{10}$

13. $\frac{1}{4}$ ◯ $\frac{1}{3}$

Write the fractions in order from least to greatest.

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

15. $\frac{7}{10}, \frac{4}{5}, \frac{1}{2}, \frac{4}{12}$

GO Online Assessment Options Chapter Test

Fill in the bubble completely to show your answer.

16. Paco needs at least $\frac{3}{8}$ yard of twine to build a model ship. How much twine could he buy?

Ⓐ $\frac{3}{10}$ yard

Ⓑ $\frac{1}{4}$ yard

Ⓒ $\frac{3}{5}$ yard

Ⓓ $\frac{1}{8}$ yard

17. Rachel, Nancy, and Diego were in a fishing competition. Rachel's fish was $\frac{7}{8}$ foot long, Nancy's fish was $\frac{1}{4}$ foot long, and Diego's fish was $\frac{1}{2}$ foot long. What are the lengths of the fish in order from least to greatest?

Ⓐ $\frac{7}{8}$ foot, $\frac{1}{2}$ foot, $\frac{1}{4}$ foot

Ⓑ $\frac{1}{2}$ foot, $\frac{7}{8}$ foot, $\frac{1}{4}$ foot

Ⓒ $\frac{7}{8}$ foot, $\frac{1}{4}$ foot, $\frac{1}{2}$ foot

Ⓓ $\frac{1}{4}$ foot, $\frac{1}{2}$ foot, $\frac{7}{8}$ foot

18. Amy needs $\frac{6}{8}$ gallon of fruit juice to make punch. She needs an equal amount of sparkling water. How much sparkling water does she need?

Ⓐ $\frac{2}{8}$ gallon

Ⓑ $\frac{1}{2}$ gallon

Ⓒ $\frac{2}{3}$ gallon

Ⓓ $\frac{3}{4}$ gallon

19. Gavin is building a model of a kitchen. In the model, $\frac{2}{5}$ of the floor tiles are white, $\frac{1}{2}$ of the floor tiles are yellow, and $\frac{1}{10}$ of the floor tiles are brown. How many floor tiles could be in the model?

Ⓐ 2

Ⓑ 5

Ⓒ 10

Ⓓ 17

Name ______________________________

Fill in the bubble completely to show your answer.

20. Bill has enough money to buy no more than $\frac{1}{2}$ pound of cheese. How much cheese could he buy?

Ⓐ $\frac{1}{3}$ pound

Ⓑ $\frac{4}{6}$ pound

Ⓒ $\frac{5}{8}$ pound

Ⓓ $\frac{3}{4}$ pound

21. Students planted 6 equal-size gardens on Earth Day. They divided each garden into 3 equal sections and planted herbs in 2 of the 3 sections. What fraction of the gardens did the students plant with herbs?

Ⓐ $\frac{3}{6}$

Ⓑ $\frac{2}{6}$

Ⓒ $\frac{6}{18}$

Ⓓ $\frac{12}{18}$

22. Noah and Leslie live the same distance from school. Which could be the distances they live from school?

Ⓐ $\frac{7}{100}$ kilometer and $\frac{7}{10}$ kilometer

Ⓑ $\frac{5}{10}$ kilometer and $\frac{1}{5}$ kilometer

Ⓒ $\frac{80}{100}$ kilometer and $\frac{8}{10}$ kilometer

Ⓓ $\frac{6}{10}$ kilometer and $\frac{2}{5}$ kilometer

23. Keiko needs $\frac{8}{12}$ yard of fabric to finish her quilt. What is $\frac{8}{12}$ written in simplest form?

Ⓐ $\frac{4}{6}$

Ⓑ $\frac{2}{3}$

Ⓒ $\frac{3}{4}$

Ⓓ $\frac{1}{2}$

Constructed Response

24. Sam needs $\frac{4}{6}$ cup of laundry detergent for his laundry. The cap on top of the laundry detergent holds $\frac{1}{3}$ cup. He has 1 capful of detergent. Does he have enough? **Explain**.

Performance Task

25. The table shows the distances of some places in town from the school.

Distance from School	
Place	**Distance**
Library	$\frac{3}{5}$ mile
Post Office	$\frac{1}{2}$ mile
Park	$\frac{3}{4}$ mile
Town Hall	$\frac{8}{10}$ mile

A Are any of the places shown in the table closer than $\frac{1}{2}$ mile to school? **Explain** how you know.

B Are any of the places shown in the table the same distance from school? **Explain** how you know.

C Which place is farthest from school? **Explain**.