Monday, May 18

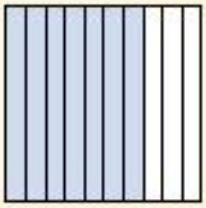
Math Assignments

Fractions as Tenths and Hundredths

Use What You Know

In earlier lessons, you worked with equivalent fractions. This lesson will focus on equivalent fractions with denominators of 10 and 100. Take a look at this problem.

Doss is riding his bike home. He has seven tenths of a mile to go. Write an equivalent fraction to show how much Doss has left to ride in hundredths of a mile.



a. What fraction does the model show? Explain your reasoning.

_____

_____

b. What is the denominator of the fraction? _____

c. The distance is given in tenths. You need to find the distance in hundredths. Hundredths is how many times the number of equal parts as tenths? _____

d. What is the numerator of the fraction seven tenths? _____

e. Explain how you could use multiplication to find a fraction with a denominator of 100 that is equivalent to $\frac{7}{10}$.

_____

_____

_____

_____

Find Out More

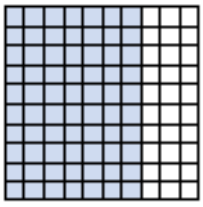
Every fraction with a denominator of 10 can also be written as a fraction with a denominator of 100.

The model on the previous page is divided into 10 equal parts, or **tenths**. If you split each of those 10 parts into 10 equal parts, the whole is divided into 100 equal parts, or **hundredths**.

When you divide the whole into 100 equal parts instead of 10, 70 parts are shaded. There are 10 times as many equal parts, so 10 times as many of them are shaded. You could also say the tenths model has $\frac{1}{10}$ as many equal parts as the hundredths model so it has $\frac{1}{10}$ as many parts shaded.

$\frac{7}{10} = \frac{7 \times 10}{10 \times 10}$, or $\frac{70}{100}$

$\frac{70}{100} = \frac{70 \div 10}{100 \div 10}$, or $\frac{7}{10}$



You can also use money to think about equivalent fractions with denominators of 10 and 100.

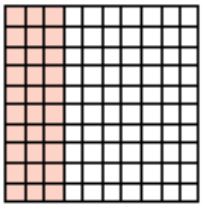
Think of 1 dollar, or 100 cents, as the whole.

- 1 dime = 10 cents, so 1 dime = $\frac{10}{100}$ of a dollar.
- 10 dimes = 1 dollar, so 1 dime = $\frac{1}{10}$ of a dollar.

So, $\frac{1}{10} = \frac{10}{100}$.

Reflect

1 What fraction of the model at the right is shaded? Write two different fractions to show the amount. Explain how to use multiplication to check that your fractions are equivalent.



Learn About

Adding Tenths and Hundredths Fractions

Read the problem below. Then explore different ways to understand how to add fractions with denominators of 10 and 100.

Carmen says that she has $\frac{4}{10}$ of a dollar. Troy says that he has $\frac{50}{100}$ of a dollar. Together, what fraction of a dollar do they have?

Picture It

You can use a picture to help you add fractions with denominators of 10 and 100.

You know that $\frac{4}{10}$ of a dollar is 4 dimes and $\frac{50}{100}$ of a dollar is 5 dimes.

Carmen's money

Troy's money

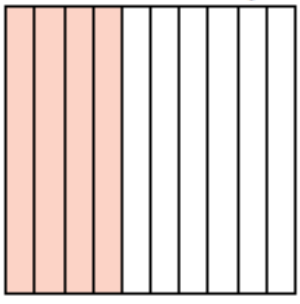
Together Carmen and Troy have 9 dimes.

9 dimes is $\frac{90}{100}$, or $\frac{9}{10}$, of a dollar.

Model It

You can use a model to help you add fractions with denominators of 10 and 100.

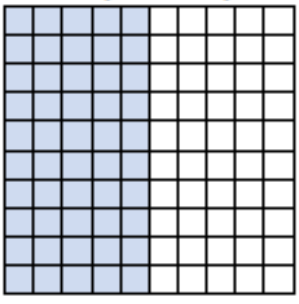
Carmen's money



$\frac{4}{10}$

+

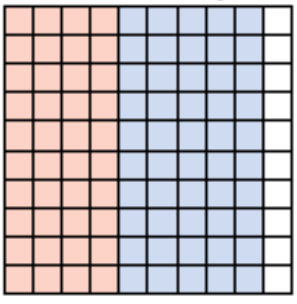
Troy's money



$\frac{50}{100}$

=

Total money



$\frac{90}{100}$

Connect It Now you will solve the problem from the previous page using equivalent fractions.

2 What are the denominators of the fractions you are adding? Are they the same?

3 Complete the equation to use multiplication to find the hundredths equivalent to $\frac{4}{10}$.

$$\frac{4}{10} = \left(\frac{4 \times \square}{10 \times \square}\right) = \frac{40}{100}$$

4 $\frac{40}{100} + \frac{50}{100} =$ _____

5 Together, Carmen and Troy have what fraction of a dollar? _____

6 Explain how you can use equivalent fractions to add a fraction with a denominator of 100 to a fraction with a denominator of 10.

Try It Use what you just learned to solve these problems. Show your work on a separate sheet of paper.

7 Giselle spent $\frac{7}{10}$ of her money on a book and $\frac{10}{100}$ of her money on food. What fraction of her money did she spend altogether? _____

8 The winning car in a race beat the second car by $\frac{19}{100}$ of a second. The third car was $\frac{4}{10}$ of a second behind the second car. By how much did the first car beat the third car? _____

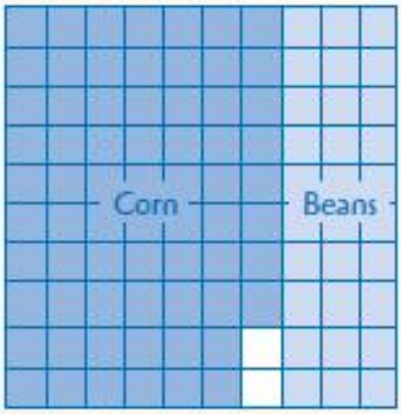
Practice Adding Tenths and Hundredths Fractions

Study the example below. Then solve problems 9–11.

Example

A farmer planted corn in $\frac{68}{100}$ of his field and beans in $\frac{3}{10}$ of the field. What fraction of his field did the farmer plant with corn and beans?

Look at how you could show your work using a model.



Solution The farmer planted $\frac{98}{100}$ of the field.

The student drew and shaded a model to show the sum of $\frac{68}{100}$ and $\frac{3}{10}$.

Pair/Share
How can you solve the problem using equivalent fractions?

9 What is the sum of $\frac{7}{100}$ and $\frac{1}{10}$?

Show your work.

Solution

There is more than one way to solve this problem!

Pair/Share
Can you explain the problem using dimes and pennies?

10 Jared, Consuela, and Reggie have an ant farm. Jared collected $\frac{25}{100}$ of the ants for the ant farm. Consuela collected $\frac{6}{10}$ of the ants. What fraction of the ants did Jared and Consuela collect altogether?

Show your work.

What do you notice about the denominators of these fractions?

Pair/Share
Draw a model to show the problem situation.

Solution _____

11 Heath has 100 trading cards. $\frac{7}{100}$ of his card collection is football cards and $\frac{7}{10}$ is baseball cards. Together, the football and baseball cards make up what fraction of Heath's card collection? Circle the letter of the correct answer.

A $\frac{7}{110}$

B $\frac{14}{100}$

C $\frac{77}{200}$

D $\frac{77}{100}$

To solve this problem without a model, what should you do first?

Ezra chose **C** as the correct answer. How did he get that answer?

_____

_____

_____

_____

Pair/Share
Chelsea chose D. How did she get that answer?

Practice

Adding Tenths and Hundredths Fractions

Solve the problems.

1 Which equation is true?

A $\frac{3}{100} + \frac{8}{10} = \frac{11}{110}$

B $\frac{3}{100} + \frac{8}{10} = \frac{38}{100}$

C $\frac{3}{100} + \frac{8}{10} = \frac{83}{100}$

D $\frac{3}{100} + \frac{8}{10} = \frac{11}{10}$

2 Noelle rode her bike $\frac{5}{10}$ of a kilometer to the library, and then another $\frac{22}{100}$ of a kilometer to her friend's house. How far did Noelle ride her bike in all?

A $\frac{27}{110}$ of a kilometer

B $\frac{7}{10}$ of a kilometer

C $\frac{72}{100}$ of a kilometer

D $\frac{225}{100}$ kilometers

3 Fill in each box with either 10 or 100 to make the equation true.

$\frac{4}{\square} + \frac{20}{\square} = \frac{60}{100}$

4 Tell whether each equation is *True* or *False*.

a. $\frac{2}{10} + \frac{1}{100} = \frac{21}{110}$ ☐ True ☐ False

b. $\frac{4}{10} + \frac{4}{100} = \frac{44}{100}$ ☐ True ☐ False

c. $\frac{1}{100} + \frac{9}{10} = \frac{19}{100}$ ☐ True ☐ False

5 Ramona had $100. She spent $\frac{60}{100}$ of her money on a pair of sneakers. She spent $\frac{3}{10}$ of her money on a tennis racket. What fraction of her money did Ramona spend?

Show your work.

Answer Ramona spent _____ of her money.

6 Write one number in each space to make the statements true.

1 tenth + 23 hundredths = _____ hundredths

23 hundredths + 1 tenth = _____ hundredths

2 tenths + 3 hundredths = _____ hundredths

4 hundredths + 3 tenths = _____ hundredths

26 hundredths = _____ tenths + 6 hundredths

Self Check **Go back and see what you can check off on the Self Check on page 143.**

Tuesday, May 19

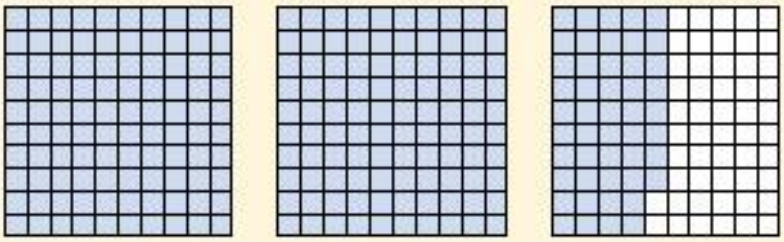
Math Assignments

Relate Decimals and Fractions

Use What You Know

You know how to write equivalent fractions with denominators of 10 and 100. In this lesson, you will learn another way to write these fractions. Take a look at this problem.

Max has 248 pennies. How many whole dollars does Max have? What fraction of a dollar is left over?



a. How many pennies are there in one dollar? _____

b. How many whole dollars can you make with 248 pennies? How many cents are left over? _____

c. One cent is equal to what fraction of a dollar? _____

d. If one cent is $\frac{1}{100}$ of a dollar, what fraction of a dollar is 48 cents? _____

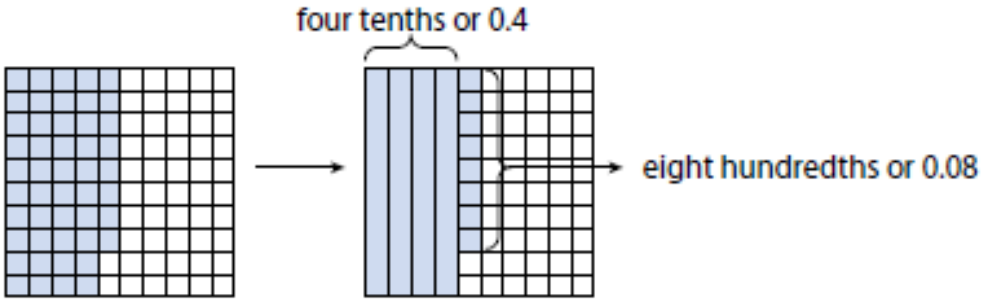
e. How do you write this amount of whole dollars and fraction of a dollar as a mixed number? _____

f. How do you write 2 dollars and 48 cents using the $ sign? _____

Find Out More

Tenths and hundredths can also be written as **decimals.**

Here is another way to think about the fraction $\frac{48}{100}$.



48 hundredths is 4 tenths and 8 hundredths.

You can use a place-value chart to understand the value of each digit. Decimals follow the same place-value pattern as whole numbers. A digit in any place has 10 times the value it would have in the place to its right and $\frac{1}{10}$ the value it would have in the place to its left.

decimal point

Ones	.	Tenths	Hundredths
2	.	4	8

whole number part

part less than 1

To read the decimal 2.48:

1. Say the whole number part, if there is one. *two*
2. Say *and* for the decimal point. *and*
3. Say the part less than 1 as a whole number. *forty-eight*
4. Say the place-value name of the last digit. *hundredths*

You read 2.48 as *two and forty-eight hundredths.*

Reflect

1 Explain how thinking about money can help you understand decimals.

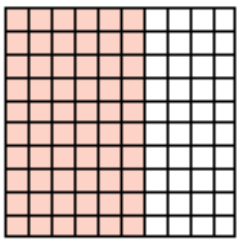
Learn About Fractions and Decimals

Read the problem below. Then explore different ways to understand how to use fractions and decimals to name the same amount.

A soccer camp has spots for 100 students. So far, 60 of those spots are filled. Write a fraction and a decimal in hundredths and tenths to show the amount of spots that are filled.

Picture It You can use a model to understand how to write hundredths or tenths as a fraction.

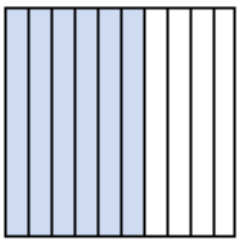
Each model represents the fraction of the soccer camp spots that are filled.



The large square is 1 whole.

Each small square is $\frac{1}{100}$ of the whole.

Sixty small squares are shaded.



The large square is 1 whole.

Each section is $\frac{1}{10}$ of the whole.

Six sections are shaded.

Model It You can use a place-value chart to understand how to write hundredths or tenths as a decimal.

The place-value chart shows the value of 0.60.

Ones	.	Tenths	Hundredths
0	.	6	0

Connect It **Now you will use the models and what you know about fractions and decimals to solve the problem.**

2 Look at *Picture It*. The model on the left shows 60 squares shaded.

Write a fraction for the model. _____

3 Divide the numerator and denominator by 10 and write the tenths fraction. How does the model on the right with six shaded sections show this fraction?

_____

_____

4 Look at the place-value chart. Write a decimal in tenths and the equivalent decimal in hundredths. How are the two decimals different?

_____

_____

_____

5 Write a number on each line below to describe how decimals relate to fractions with denominators of 10 and 100.

If the denominator of a fraction is 10, the equivalent decimal has _____ place after the decimal point.

If the denominator of a fraction is 100, the equivalent decimal has _____ places after the decimal point.

Try It **Use what you just learned to find related fractions and decimals. Show your work on a separate sheet of paper.**

6 Write a decimal equivalent to $\frac{83}{100}$. _____

7 Write a decimal equivalent to $\frac{2}{10}$. _____

Draw a model that shows the fraction and the decimal.

Learn About

Writing Decimals as Equivalent Fractions

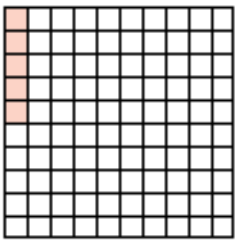
Read the problem below. Then explore different ways to write a decimal as an equivalent fraction.

Eli collects sports cards. He says 0.05 of his cards are baseball cards.
What fraction of his cards are baseball cards?

Picture It

You can use a model to help write a decimal as an equivalent fraction.

The model shows 0.05.



Model It

You can also use a place-value chart to help write a decimal as an equivalent fraction.

The place-value chart shows the value of 0.05.

Ones	.	Tenths	Hundredths
0	.	0	5

Connect It

Now you will use the model and the place-value chart to solve the problem.

8 How can the model help you write a fraction equivalent to 0.05?

9 How can the place-value chart help you write a fraction equivalent to 0.05?

10 Use words to describe the fraction of Eli's cards that are baseball cards.

11 What fraction of Eli's cards are baseball cards? _____

12 Explain how you can write a decimal in hundredths as a fraction.

Try It

Use what you just learned to write decimals as fractions. Show your work on a separate sheet of paper.

13 Write 0.9 in words and as a fraction. _____

14 Write 0.89 in words and as a fraction. _____

Practice Relating Decimals and Fractions

Study the example below. Then solve problems 15–17.

Example

Jayne read that it takes about two tenths of a second to blink an eye. She wrote that a blink takes about 0.02 of a second. Is Jayne correct?

Look at how you could show your work using a place-value chart.

Ones	.	Tenths
0	.	2

Two tenths as a decimal is 0.2, not 0.02.

Solution Jayne is not correct. Two tenths written as a decimal is 0.2.

The student used a place-value chart. The tenths place is the first place to the right of the decimal point.

Pair/Share
How could you solve the problem using a model?

15 What is 0.7 written as a fraction?

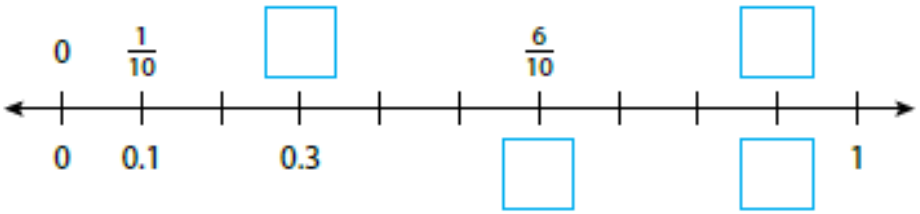
Show your work.

Solution _____

How could drawing a model help you?

Pair/Share
How do you know if the decimal represents tenths or hundredths?

16 The number line below shows 1 whole divided into tenths. Write numbers in the boxes to label the missing fractions and decimals. Explain how you know what numbers to write.



Could saying each number aloud help?

Pair/Share
How could you show hundredths on this number line?

17 What decimal names the same amount as $\frac{50}{100}$? Circle the letter of the correct answer.

A 0.50

B 0.05

C 50.0

D 50.10

Abby chose **B** as the correct answer. How did she get that answer?

What does the denominator of the fraction tell you?

Pair/Share
What is a decimal in tenths that is equivalent to $\frac{50}{100}$?

Practice

Relating Decimals and Fractions

Solve the problems.

1 What is 0.75 written as a fraction?

A $\frac{.75}{100}$

B $\frac{0}{75}$

C $\frac{75}{100}$

D $\frac{75}{10}$

2 Which fraction and decimal are equivalent? Circle all that apply.

A $\frac{4}{10}$ and 0.04

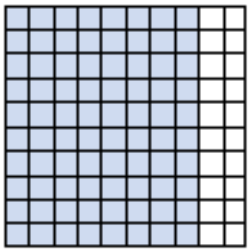
B $\frac{6}{100}$ and 0.60

C $\frac{3}{10}$ and 0.3

D $\frac{9}{100}$ and 0.09

E $\frac{7}{10}$ and 7.10

3 Model *A* is shaded to represent a value that is less than 1 whole.



Model *A*

Choose *Yes* or *No* to indicate whether the value of the shaded part of Model *A* is equivalent to the value shown.

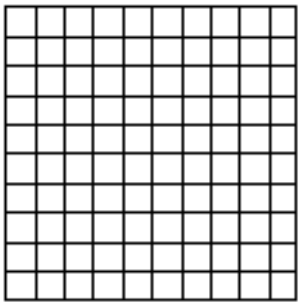
a. $\frac{8}{10}$ ☐ Yes ☐ No

b. $\frac{80}{100}$ ☐ Yes ☐ No

c. 0.08 ☐ Yes ☐ No

4 A test has 100 questions. Cora got 85 questions correct. What decimal shows the part of the test she answered correctly? What decimal shows the part of the test she answered incorrectly? Model the decimals below.

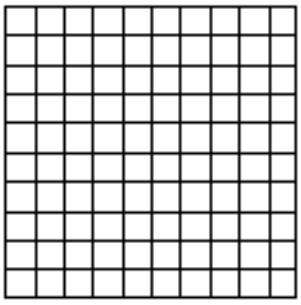
Show your work.



Solution _____

5 Kelly found some dimes and pennies in her dad's car. She found 5 coins in all. The coins totaled more than 20 cents, but less than 50 cents. What coins could Kelly have found? Write the amount as a fraction of a dollar and as an equivalent decimal. Model the fraction and decimal below.

Show your work.



Answer Kelly could have found _____.

Fraction _____ ***Decimal*** _____

Self Check **Go back and see what you can check off on the Self Check on page 143.**

Wednesday, May 20

Math Assignments

Compare Fractions

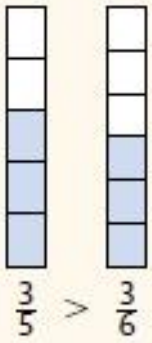
LESSON 18

Dear Family,

This week your child is learning to compare fractions.

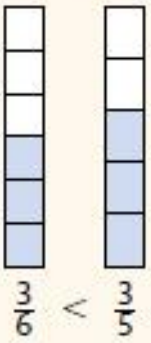
There are different ways to compare fractions.

One way to compare fractions, such as $\frac{3}{5}$ and $\frac{3}{6}$, is to use models. You must use the same-sized whole for both. If the wholes are different sizes, it does not make sense to compare the parts. Each whole model below is the same size.



$\frac{3}{5} > \frac{3}{6}$

$\frac{3}{5}$ is greater than $\frac{3}{6}$.



$\frac{3}{6} < \frac{3}{5}$

$\frac{3}{6}$ is less than $\frac{3}{5}$.

Another way to compare fractions is to write equivalent fractions with the same denominators. Using the same denominators means that there are the same number of parts in each whole. Then you can compare the numerators to find which fraction has a greater number of parts.

$$\frac{3 \times 6}{5 \times 6} = \frac{18}{30} \qquad \frac{3 \times 5}{6 \times 5} = \frac{15}{30}$$

$$\frac{18}{30} > \frac{15}{30}, \text{ so } \frac{3}{5} > \frac{3}{6}.$$

Your child might also use a number line to compare fractions by comparing each fraction to a **benchmark fraction**, such as $\frac{1}{2}$.

Invite your child to share what he or she knows about comparing fractions by doing the following activity together.

ACTIVITY COMPARING FRACTIONS

Do this activity with your child to compare fractions.

Materials 4 same-sized clear glasses, colored liquid

- Fill one glass to the top with colored liquid. This glass represents 1 whole. Fill another glass half full to represent $\frac{1}{2}$. Leave a third glass empty to represent 0.
- Pour any amount of liquid into the fourth glass. Compare the fourth glass to the full glass and the empty glass to determine if the amount of liquid represents a fraction that is closer to 0 or to 1.
- Then determine if the amount of liquid in the fourth glass represents a fraction that is greater than or less than $\frac{1}{2}$. You can check your answer by comparing the fourth glass to the glass that is half full.
- Now empty the fourth glass. Take turns filling it with various amounts of colored liquid and describing the quantity as representing a fraction that is greater than or less than $\frac{1}{2}$.
- Talk with your child about why it is important that the four glasses are the same size and shape. (Half of a tall glass is a different amount of liquid than half of a short glass.)

Understand Fraction Addition and Subtraction

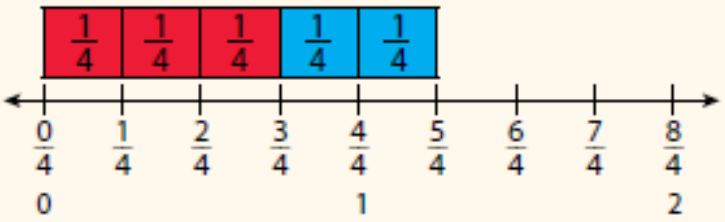
LESSON 19

Dear Family,

This week your child is exploring fraction addition and subtraction.

Adding fractions means joining or putting together parts of the same whole. When you add $\frac{3}{4}$ and $\frac{2}{4}$, you are putting one-fourths together.

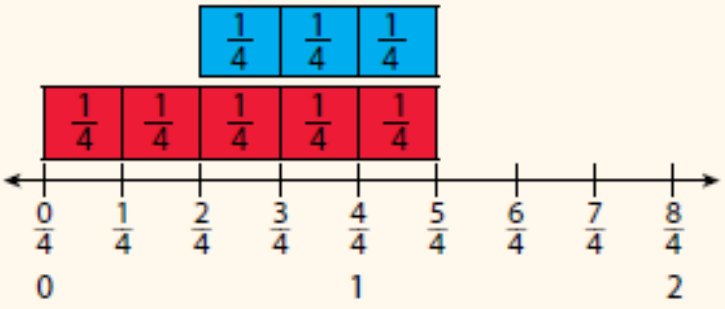
- You can use a number line to show $\frac{3}{4} + \frac{2}{4} = \frac{5}{4}$.



Subtracting fractions means separating or taking away. When you subtract $\frac{3}{4}$ from $\frac{5}{4}$, you are taking away one-fourths.

- You can use a number line to show fraction subtraction, too.

The number line below shows $\frac{5}{4} - \frac{3}{4} = \frac{2}{4}$.



Adding and subtracting fractions is just like adding and subtracting whole numbers. When the denominators of the fractions are the same, you can just add or subtract the numerators.

Invite your child to share what he or she knows about fraction addition and subtraction by doing the following activity together.

ACTIVITY FRACTION ADDITION AND SUBTRACTION

Do this activity with your child to explore adding and subtracting fractions.

Materials 1 piece of fruit (or a picture of 1 piece of fruit)

- Cut the fruit (or the picture of fruit) into sixths.

  Explain that the 6 pieces should be the same size, so each piece is $\frac{1}{6}$ of the whole.

- Have your child take some of the pieces.
  You take some of the pieces.

- Now talk about putting your pieces of fruit together.
  Ask: *How much of the whole fruit do you have together?*

  Example: Your child takes $\frac{2}{6}$. You take $\frac{3}{6}$.

  Together you have $\frac{5}{6}$ of the fruit.

- Put your and your child's pieces of fruit together and look at the total.
  Have your child take some of the pieces.
  Ask: *How much of the whole fruit is left?*

  Example: Your child takes 3 pieces.

  Start with $\frac{5}{6}$. Take away $\frac{3}{6}$.

  That means $\frac{2}{6}$ of the fruit is left.

- Look for other real-life opportunities to explore adding and subtracting fractions with your child.

Add and Subtract Fractions

LESSON 20

Dear Family,

This week your child is learning how to add and subtract fractions with like denominators.

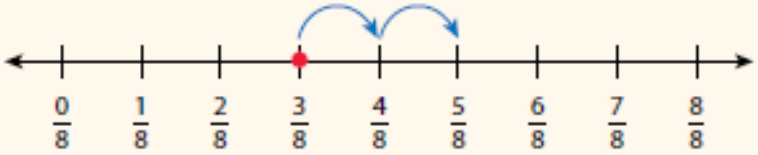
Fractions with the same number below the line have like denominators.

like denominators: $\frac{1}{4}$ and $\frac{3}{4}$ unlike denominators: $\frac{1}{2}$ and $\frac{3}{4}$

To find the sum of fractions with like denominators, understand that you are adding like units. Just as 3 apples plus 2 apples is 5 apples, 3 eighths plus 2 eighths is 5 eighths. Similarly, when you take away, or subtract, 2 eighths from 5 eighths, you have 3 eighths left.

$\frac{3}{8} + \frac{2}{8} = \frac{5}{8}$

You can also use a number line to understand adding and subtracting like fractions.



Remember that the denominator names units the same way that "apples" names units.

So, when you add two fractions with like denominators, the sum of the numerators tells how many of those units you have.

When you subtract two fractions with like denominators, the difference of the numerators tells how many of those units you have.

Invite your child to share what he or she knows about adding and subtracting fractions by doing the following activity together.

ACTIVITY ADDING AND SUBTRACTING FRACTIONS

Do this activity with your child to add and subtract fractions.

Materials bowl, measuring cup, ingredients shown in the recipe

Follow the recipe below to make a creamy cracker spread or veggie dip.

Creamy Spread

Ingredients

$\frac{5}{8}$ cup cream cheese

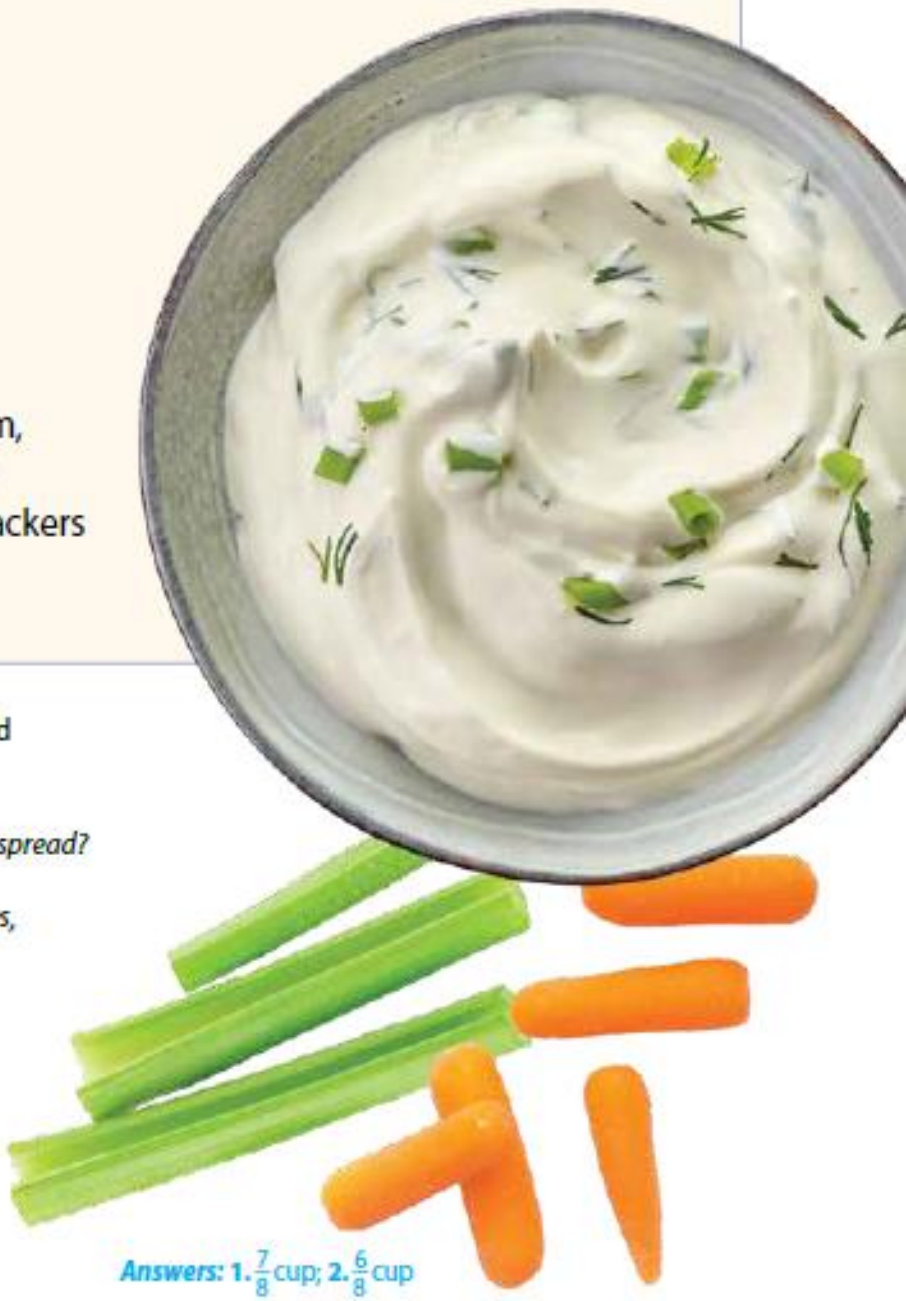
$\frac{2}{8}$ cup sour cream

herbs

crackers or veggies

Directions

Mix the cream cheese, sour cream, and herbs together in a medium bowl. Serve immediately with crackers or sliced fresh veggies. Enjoy!



After you have made the spread, ask your child questions such as these:

1. *What fraction of a cup is the total amount of spread?*
2. *If you spread $\frac{1}{8}$ of a cup on crackers or veggies, how much spread is left?*

Make up a simple recipe using fractions for someone else in the family to make!

Answers: **1.** $\frac{7}{8}$ cup; **2.** $\frac{6}{8}$ cup

Understand Fraction Multiplication

LESSON 23

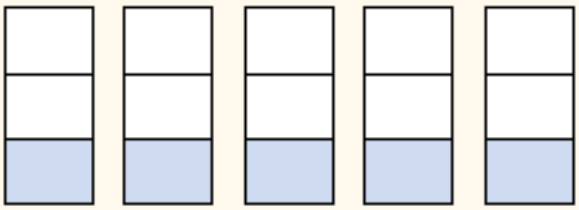
Dear Family,

This week your child is exploring fraction multiplication.

Multiplying fractions is finding the total number of equal-sized parts in equal groups.

Your child can use a model to understand fraction multiplication.

This model shows $5 \times \frac{1}{3}$.



You can see that there are 5 groups of $\frac{1}{3}$.

There are $\frac{5}{3}$ in all.

The denominator tells the number of equal-sized parts in the whole.

There are 3 equal-sized parts in each whole.

Your child can also think about repeated addition to understand fraction multiplication.

Adding $\frac{1}{3}$ five times is the same as multiplying $\frac{1}{3}$ by 5.

$$\frac{1}{3} + \frac{1}{3} + \frac{1}{3} + \frac{1}{3} + \frac{1}{3} = \frac{5}{3}$$

Invite your child to share what he or she knows about fraction multiplication by doing the following activity together.

ACTIVITY FRACTION MULTIPLICATION

Do this activity with your child to explore fraction multiplication.

Materials bowl, measuring cup, ingredients shown in the recipe

- Look at the recipe below for snack mix.
- Rewrite the recipe so that you can make four times as much snack mix. Multiply the amount of each ingredient by 4.
- Make the recipe and enjoy!

Snack Mix

Ingredients

$\frac{1}{4}$ of a cup pretzels

$\frac{3}{4}$ of a cup nuts of your choice

$\frac{1}{2}$ of a cup raisins

$\frac{2}{3}$ of a cup cereal

$\frac{1}{3}$ of a cup chocolate chips (optional)

Directions

Mix all the ingredients together. Store in a container.

Answer: 1 cup pretzels, 3 cups nuts, 2 cups raisins, $\frac{8}{3}$ or $2\frac{2}{3}$ cups cereal, $\frac{4}{3}$ or $1\frac{1}{3}$ cups chocolate chips

Multiply Fractions by Whole Numbers

LESSON 24

Dear Family,

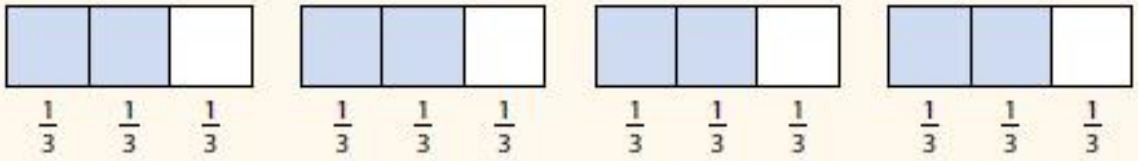
This week your child is learning to multiply fractions by whole numbers to solve word problems.

Your child might see a problem such as the one below.

> *Randy practices guitar for $\frac{2}{3}$ of an hour on 4 days this week. How long does Randy practice guitar this week?*

Using fraction models can help your child solve this word problem.

Each fraction model below is divided into thirds and shows $\frac{2}{3}$, the fractional amount of an hour that Randy practices guitar each day.



Day 1 **Day 2** **Day 3** **Day 4**

The fraction models show $4 \times \frac{2}{3}$. The fraction models show $\frac{8}{3}$.

Your child can also write an equation to find how long Randy practices guitar.

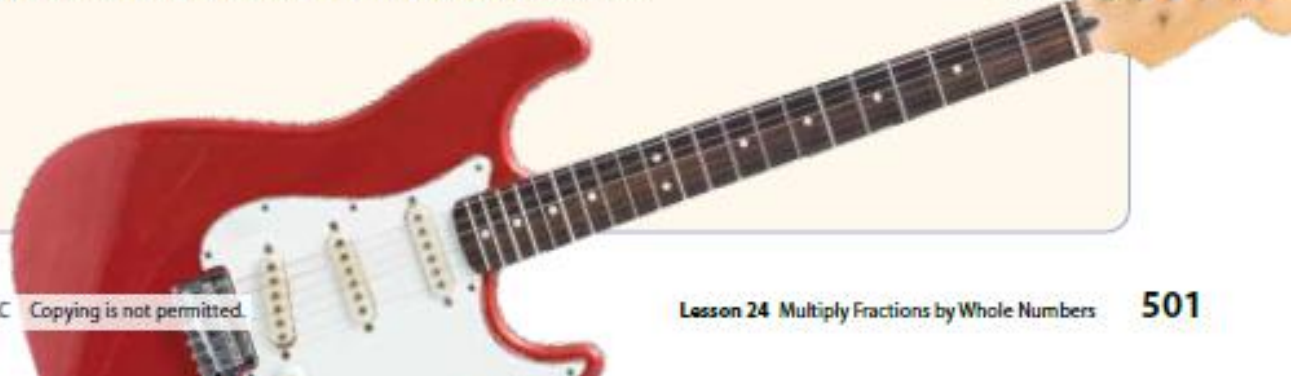
$$4 \times \frac{2}{3} = \frac{8}{3}$$

Then your child can check his or her answer by using repeated addition.

$$\frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3} = \frac{8}{3}$$

The answer is that Randy practices guitar $\frac{8}{3}$, or $2\frac{2}{3}$, hours this week.

Invite your child to share what he or she knows about multiplying fractions by whole numbers by doing the following activity together.



ACTIVITY MULTIPLYING FRACTIONS BY WHOLE NUMBERS

Do this activity with your child to multiply fractions by whole numbers.

Materials large pitcher, measuring cup, ingredients shown in the recipe

- Look at the recipe below for punch.
- Rewrite the recipe so that you can make three times as much punch. Multiply the amount of each ingredient by 3.
- Make the recipe and enjoy!

Cranberry Cooler Party Punch

Ingredients

3 cups cranberry juice

$\frac{1}{2}$ of a cup orange juice

2 cups grape juice

$\frac{1}{4}$ of a cup lemon juice

$\frac{1}{2}$ of a cup crushed pineapple

Directions

Stir all ingredients together.
Pour into serving glasses.

Answer: 9 cups cranberry juice, $\frac{3}{2}$ or $1\frac{1}{2}$ cups orange juice, 6 cups grape juice, $\frac{3}{4}$ of a cup lemon juice, $\frac{3}{2}$ or $1\frac{1}{2}$ cups crushed pineapple

Center Activity 4.29 ★★

Use Fraction Vocabulary

What You Need

- Recording Sheet

Check Understanding

Use fraction vocabulary to describe one way to compare $\frac{7}{10}$ and $\frac{3}{5}$.

What You Do

1. Use words from the word bank to fill in the blanks on the **Recording Sheet.** You may use some words more than once. There may be words that you do not use.
2. Take turns. After you fill in a blank, your partner fills in the next one.
3. When all the blanks are filled in, read the paragraphs aloud. Do they make sense?
4. Fix any mistakes that you find.

Go Further!

Write two sentences about comparing numbers using two of the words in the word bank on the **Recording Sheet.**

Center Activity 4.29 ★★ Recording Sheet

Partner A _____

Partner B _____

Use Fraction Vocabulary

What are three different ways to compare $\frac{6}{10}$ and $\frac{2}{100}$?

1. Find a fraction _____ to $\frac{6}{10}$ with a _____ of 100: $\frac{6}{10} \times \frac{10}{10} = \frac{60}{100}$. The fraction $\frac{60}{100}$ is _____ $\frac{2}{100}$. So, $\frac{6}{10}$ is _____ $\frac{2}{100}$.

2. Find a fraction _____ to $\frac{2}{100}$ with a _____ of 6: $\frac{2}{100} \times \frac{3}{3} = \frac{6}{300}$. The denominator in $\frac{6}{10}$ is _____ the denominator in $\frac{6}{300}$, which means that $\frac{6}{10}$ has larger parts. The fraction $\frac{6}{10}$ is _____ $\frac{6}{300}$. So, $\frac{6}{10}$ is _____ $\frac{2}{100}$.

3. Compare $\frac{6}{10}$ and $\frac{2}{100}$ to the _____ fraction $\frac{1}{2}$. The fraction $\frac{6}{10}$ is _____ $\frac{1}{2}$, and $\frac{2}{100}$ is _____ $\frac{1}{2}$. So, $\frac{6}{10}$ is _____ $\frac{2}{100}$.

Word Bank
less than (<)
greater than (>)
benchmark
symbol
numerator
denominator
fraction
equivalent

Center Activity 4.30 ★★

Comparing Fractions

What You Need

- Recording Sheet

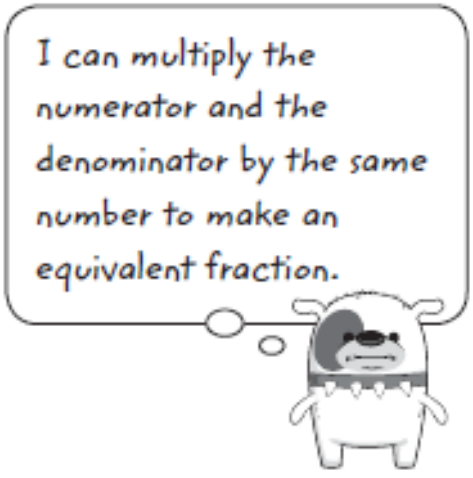
Check Understanding

Compare.
Write <, =, or >.

$\frac{6}{8} \bigcirc \frac{3}{12}$

What You Do

1. Take turns. Choose a pair of fractions on the **Recording Sheet.**
2. Write equivalent fractions with a common numerator or common denominator to compare the fractions. Write <, =, or > in the circle.
3. Your partner checks your answer using benchmark fractions.
4. Continue until all the problems on the **Recording Sheet** have been completed.



Go Further!

Choose one of the problems on the **Recording Sheet.** Draw a model to justify your answer. Exchange papers with your partner to check.

Center Activity 4.30 ★★ Recording Sheet

Partner A _____

Partner B _____

Comparing Fractions

$\frac{1}{2} \bigcirc \frac{4}{5}$	$\frac{8}{10} \bigcirc \frac{2}{3}$
$\frac{4}{6} \bigcirc \frac{2}{8}$	$\frac{10}{12} \bigcirc \frac{5}{6}$
$\frac{4}{10} \bigcirc \frac{8}{12}$	$\frac{2}{3} \bigcirc \frac{3}{4}$
$\frac{3}{6} \bigcirc \frac{1}{3}$	$\frac{6}{8} \bigcirc \frac{10}{12}$
$\frac{2}{5} \bigcirc \frac{6}{15}$	$\frac{5}{6} \bigcirc \frac{3}{4}$

Center Activity 4.61 ★★

Make a Whole!

What You Need

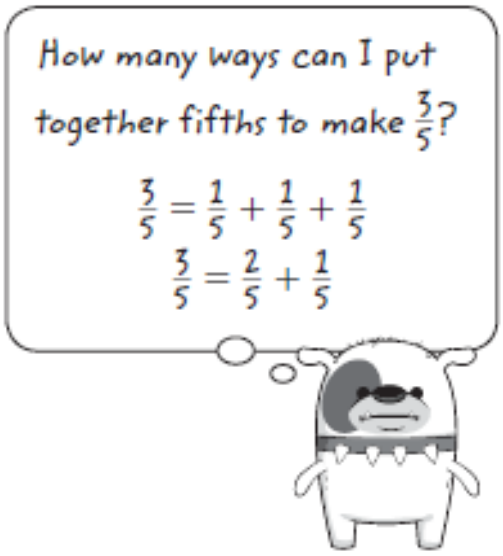
- Fraction Cards
- Recording Sheet

Check Understanding

Tell three different ways to put together eighths to make $\frac{5}{8}$.

What You Do

1. Shuffle the **Fraction Cards** and place them facedown in a pile.
2. The first partner picks a **Fraction Card** and finds a way to put the fraction together. The second partner finds another way to put the fraction together using a different combination of fractions. Take turns to find different ways to put the fraction together.
3. Continue until one partner cannot find a new way to put the fraction together on his or her turn. The other partner shades one part of his or her whole circle on the **Recording Sheet**.
4. The first player to shade his or her whole circle on the **Recording Sheet** wins.
5. Shuffle the cards and play again.



Go Further!

Place the **Fraction Cards** facedown in a pile. Pick a card but do not show it to your partner. Say a way to put together the fraction on the card. Your partner tells the fraction on your card.

Center Activity 4.61 ★★ Fraction Cards

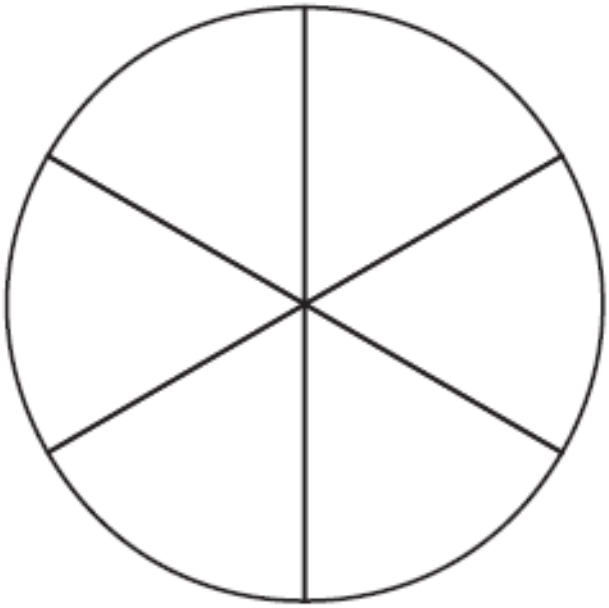
$\frac{2}{4}$	$\frac{3}{4}$	$\frac{4}{4}$	$\frac{2}{6}$	$\frac{3}{6}$	$\frac{4}{6}$
$\frac{5}{6}$	$\frac{6}{6}$	$\frac{2}{8}$	$\frac{3}{8}$	$\frac{4}{8}$	$\frac{5}{8}$
$\frac{6}{8}$	$\frac{7}{8}$	$\frac{8}{8}$	$\frac{2}{10}$	$\frac{3}{10}$	$\frac{4}{10}$
$\frac{5}{10}$	$\frac{6}{10}$	$\frac{7}{10}$	$\frac{8}{10}$	$\frac{9}{10}$	$\frac{10}{10}$

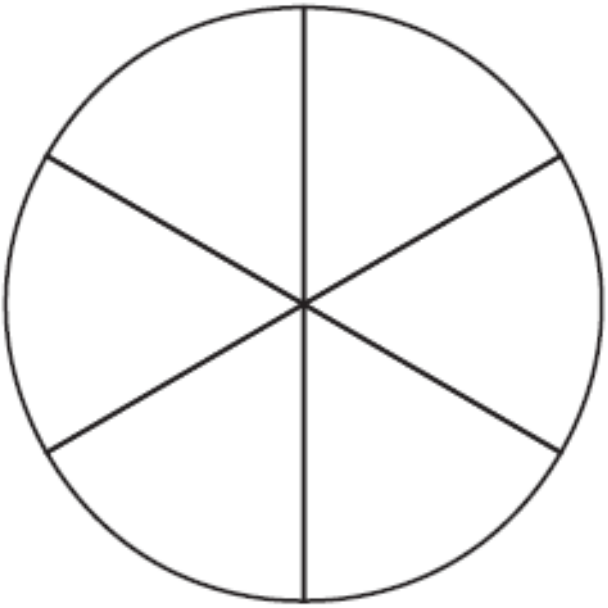
Center Activity 4.61 ★★ Recording Sheet

Partner A _____

Partner B _____

Partner A	Partner B





Center Activity 4.31 ★★

Different Ways to Show Sums

What You Need

- number cube
- 15 game markers in one color
- 15 game markers in a different color
- Game Board

Check Understanding

Use twelfths to write three different addition expressions that equal $\frac{5}{12}$.

What You Do

1. Take turns. Roll the number cube. Find the fraction sum next to that toss in the table.
2. Find one expression on the **Game Board** that has that sum. Your partner checks your expression.
3. If you are correct, place your game marker on that expression. If you are not correct or if there are no uncovered expressions with that sum, your turn ends.
4. Continue until all the expressions on the **Game Board** have been covered.
5. The player with the greater number of game markers on the **Game Board** wins.

Toss	Sum
1	$\frac{9}{8}$
2	$\frac{5}{6}$
3	$\frac{3}{8}$
4	$\frac{4}{6}$
5	$\frac{8}{6}$
6	$\frac{7}{8}$

Go Further!

Write two addition expressions using sixths that equal $\frac{8}{6}$ and are NOT on the **Game Board.** Exchange papers with your partner to check.

Center Activity 4.31 ★★ Game Board

Partner A _____

Partner B _____

Different Ways to Show Sums

$\frac{1}{6}+\frac{1}{6}+\frac{1}{6}+\frac{5}{6}$	$\frac{1}{6}+\frac{1}{6}+\frac{1}{6}+\frac{1}{6}+\frac{1}{6}$	$\frac{2}{8}+\frac{3}{8}+\frac{4}{8}$	$\frac{2}{6}+\frac{1}{6}+\frac{1}{6}$	$\frac{1}{8}+\frac{1}{8}+\frac{1}{8}$
$\frac{4}{6}+\frac{2}{6}+\frac{1}{6}+\frac{1}{6}$	$\frac{4}{8}+\frac{3}{8}$	$\frac{2}{6}+\frac{3}{6}$	$\frac{4}{8}+\frac{1}{8}+\frac{1}{8}+\frac{1}{8}$	$\frac{2}{6}+\frac{1}{6}+\frac{1}{6}+\frac{1}{6}$
$\frac{2}{8}+\frac{2}{8}+\frac{3}{8}$	$\frac{3}{6}+\frac{1}{6}+\frac{1}{6}$	$\frac{1}{8}+\frac{1}{8}+\frac{1}{8}+\frac{1}{8}+\frac{3}{8}$	$\frac{3}{6}+\frac{5}{6}$	$\frac{1}{6}+\frac{2}{6}+\frac{1}{6}$
$\frac{3}{8}+\frac{3}{8}+\frac{3}{8}$	$\frac{2}{6}+\frac{2}{6}+\frac{1}{6}$	$\frac{1}{8}+\frac{2}{8}$	$\frac{2}{6}+\frac{2}{6}$	$\frac{1}{8}+\frac{2}{8}+\frac{1}{8}+\frac{2}{8}+\frac{1}{8}$
$\frac{1}{6}+\frac{2}{6}+\frac{1}{6}+\frac{1}{6}$	$\frac{4}{8}+\frac{3}{8}+\frac{1}{8}+\frac{1}{8}$	$\frac{2}{6}+\frac{2}{6}+\frac{4}{6}$	$\frac{1}{6}+\frac{1}{6}+\frac{1}{6}+\frac{1}{6}$	$\frac{2}{8}+\frac{1}{8}$

I can combine or break apart addends to find different expressions for a sum.

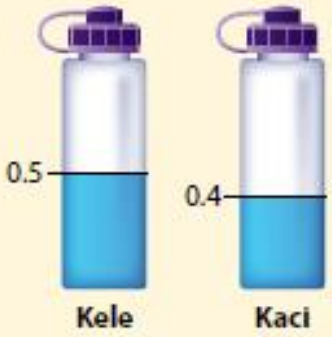
Thursday, May 21

Math Assignments

Use What You Know

You know how to compare whole numbers and fractions. In this lesson, you will compare decimals. Take a look at this problem.

Kele and Kaci each bought equal-size bottles of water. They each drank some of their water. Kele now has 0.5 of his bottle left. Kaci has 0.4 of her bottle left. Who has more water left?



a. Write 0.5 in words. _____

b. What fraction is equivalent to 0.5? _____

c. Write 0.4 in words. _____

d. What fraction is equivalent to 0.4? _____
Describe how to compare fractions that have the same denominator.

_____

_____

_____

e. Who has more water left? Explain how you know.

_____

Find Out More

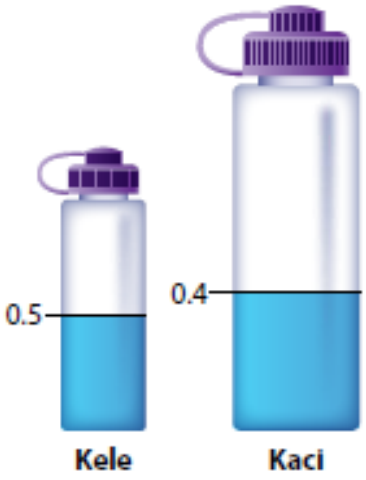
You can use the symbols $>$, $<$, or $=$ to compare decimals.

$0.5 > 0.4$ means that 0.5 is greater than 0.4.
$0.4 < 0.5$ means that 0.4 is less than 0.5.

You can compare 0.5 and 0.4 in a place-value chart.

Ones	.	Tenths	Hundredths
0	.	5	0
0	.	4	0

Compare the places from left to right as you do with whole numbers.
The ones are the same, so look at the tenths:
5 > 4, so **0.5 > 0.4**.



But what if Kaci's bottle of water was larger than Kele's bottle? Then the comparison would not make sense.

Comparing decimals is like comparing fractions. When you compare fractions or decimals, you must have the same-size whole.

Reflect

1 Describe how to compare the two decimals 0.6 and 0.8.

Learn About

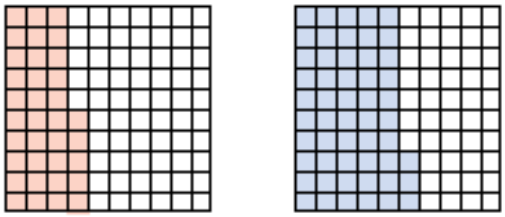
Comparing Hundredths Decimals

Read the problem below. Then explore different ways to compare two decimals when both are in hundredths.

Dora lives 0.35 mile from school. Katrina lives 0.53 mile from school. Who lives a greater distance from school?

Picture It You can use a model to help compare decimals in hundredths.

Each large square is one whole. The shaded areas show 0.35 and 0.53.



0.35 0.53

0.35 is thirty-five hundredths.

0.53 is fifty-three hundredths.

Model It You can also use a place-value chart to help compare decimals in hundredths.

The place-value chart shows 0.35 and 0.53.

Ones	.	Tenths	Hundredths
0	.	3	5
0	.	5	3

Compare ones: Both digits are the same.

Compare tenths: 5 > 3.

Since the tenths digits are different, you don't need to compare hundredths digits.

Connect It Now you will solve the problem from the previous page by reasoning about the fractions that are equivalent to the decimals.

2 Look at the models on the previous page.

Write a fraction equivalent to 0.35: _____; to 0.53: _____

3 Which fraction is greater? Explain how you know. _____

4 Write >, <, or = in the circle to make a true statement: 0.35 ◯ 0.53.

Who lives a greater distance from school? _____

Do the model and place-value chart support your answer? Explain.

5 Explain how you can use fractions to compare two decimals when both are in hundredths. _____

Try It Use what you just learned to solve these problems. Show your work on a separate sheet of paper.

6 Compare 0.21 and 0.12 using >, =, or <. Explain how you got your answer.

7 Which is less: 0.97 or 0.79? Use fractions to help solve the problem. _____

Learn About

Comparing Tenths and Hundredths Decimals

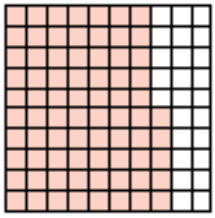
Read the problem below. Then explore different ways to compare decimals when one is in tenths and the other is in hundredths.

Most bumblebees are about 0.75 of an inch long. A common hornet is about 0.8 of an inch long. Which insect is longer?

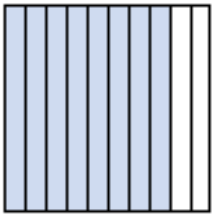
Picture It

You can use a model to help compare decimals in tenths and hundredths.

Each large square is one whole. The models show 0.75 and 0.8.



0.75



0.8

Model It

You can also use a place-value chart to compare decimals in tenths and hundredths.

Notice that 0.8 has a 0 in the hundredths place in the chart. Remember that 8 tenths is equivalent to 80 hundredths.

Ones	.	Tenths	Hundredths
0	.	7	5
0	.	8	0

Compare ones: The digits are the same.

Compare tenths: 8 > 7.

Since the tenths digits are different, you don't have to compare hundredths.

Connect It

Now you will solve the problem from the previous page by reasoning about the fractions that are equivalent to the decimals.

8 Write fractions equivalent to 0.75 and 0.8. _____

9 How can you compare fractions with denominators of 100 and 10?

_____

_____

10 What fraction with a denominator of 100 is equivalent to $\frac{8}{10}$? _____

11 Compare the fractions. Then compare 0.75 and 0.8 using >, <, or =.

_____

Which insect is longer? _____

12 Explain how you can compare decimals when one is in tenths and the other is in hundredths. _____

_____

_____

Try It

Use what you just learned to solve these problems. Show your work on a separate sheet of paper.

13 Compare 0.37 and 0.4 using >, <, or =. Explain how you got your answer.

_____

_____

_____

14 Which is greater: 0.9 or 0.92? _____

Show how you can use fractions to solve the problem.

_____

Practice Comparing Decimals

Study the example below. Then solve problems 15–17.

Example

Heath caught a bug that weighs 1.9 grams and Ty caught a bug that weighs 1.09 grams. Which bug weighs more?

Look at how you could show your work using equivalent fractions.

0.9 is nine tenths, or $\frac{9}{10}$.

0.09 is nine hundredths, or $\frac{9}{100}$.

$\frac{9}{10}$ is equivalent to $\frac{90}{100}$.

$\frac{90}{100} > \frac{9}{100}$, so $1.9 > 1.09$.

Solution Heath's bug weighs more.

The student compared the decimal parts of the numbers because the whole number parts are the same.

Pair/Share

How do the values of the 9s compare in the two numbers?

---

15 Compare 0.3 and 0.8 using >, =, or <. Draw a model or number line to support your solution.

Show your work.

Solution

What models can you use to support your solution?

Pair/Share

Compare the models that you and your partner used.

16 Mika ran the 50-yard dash in 7.39 seconds. Felix ran it in 7.6 seconds. Who ran faster?

Show your work.

Does the greater number mean a faster or slower time?

Pair/Share
How did you and your partner decide what method to use to solve the problem?

Solution _____

17 Which statement and reasoning is true about the decimals 0.45 and 0.5? Circle the letter of the correct answer.

A $0.45 < 0.5$ because hundredths are greater than tenths.

B $0.45 < 0.5$ because $\frac{45}{100} < \frac{50}{100}$.

C $0.45 > 0.5$ because $45 > 5$.

D $0.45 > 0.5$ because hundredths are greater than tenths.

Sarah chose **C** as the correct answer. How did she get that answer?

Make sure that the reasoning makes sense, too—not just the comparison.

Pair/Share
Explain how you chose your answer.

Practice Comparing Decimals

Solve the problems.

1 Which change would make the following a true statement?

$0.5 < 0.43$

A Put a 3 in the hundredths place to change 0.5 to 0.53.

B Change the hundredths digit in 0.43 to 0.

C Put a 0 in the tenths place to change 0.5 to 0.05.

D Put a 0 in the hundredths place to change 0.5 to 0.50.

2 Which decimal is less than 0.75?

A 0.9

B 0.94

C 0.80

D 0.7

3 Which of the following decimals is greater than 0.07 but less than 0.3? Circle the letter for all that apply.

A 0.02

B 0.34

C 0.27

D 0.73

E 0.1

4 Tell whether each statement is *True* or *False*.

a. $0.5 < 0.6$ because $\frac{5}{10}$ is less than $\frac{6}{10}$. ☐ True ☐ False

b. $0.25 > 0.3$ because 25 is greater than 3. ☐ True ☐ False

c. $0.89 > 0.8$ because $\frac{89}{100}$ is greater than $\frac{80}{100}$. ☐ True ☐ False

d. $0.06 = 0.6$ because 6 equals 6. ☐ True ☐ False

e. $0.4 < 0.14$ because 4 is less than 14. ☐ True ☐ False

5 Jana wrote two numbers that are between 0.4 and 0.45 on the board. What numbers could Jana have written?

Solution _____

6 Troy said that $0.9 > 0.90$ because tenths are greater than hundredths. Keith said that $0.9 < 0.90$ because 90 is greater than 9. How would you compare 0.9 and 0.90? Do you agree with either Troy or Keith? Write the symbol $<$, $>$, or $=$ on the line below to correctly compare the numbers.

Show your work.

Answer 0.9 _____ 0.90

Self Check **Go back and see what you can check off on the Self Check on page 143.**

Friday, May 22

Math Assignments

Introduction

Use Fractions and Decimals

MP1 Make sense of problems and persevere in solving them.

Study an Example Problem and Solution

Read this problem involving fractions and decimals. Then look at Luna's solution to this problem.

Sand Jars

Luna made these notes after she made a sand art design in a 2-cup jar.

- I used a glass jar that holds 2 cups.
- I used less than 1 cup of yellow sand.
- I filled less than 0.4 of the jar with pink sand.
- I filled more than 0.2 of the jar with purple sand.

Luna wants to write specific instructions for making the same kind of design that would work for a jar of any size.

- Find fractions or decimals to tell exactly what part of each jar to fill with pink, purple, and yellow sand.
- Write instructions using those numbers.

Read the sample solution on the next page. Then look at the checklist below. Find and mark parts of the solution that match the checklist.

Problem-Solving Checklist

- ☐ Tell what is known.
- ☐ Tell what the problem is asking.
- ☐ Show all your work.
- ☐ Show that the solution works.

a. Circle something that is known.

b. Underline something that you need to find.

c. Draw a box around what you do to solve the problem.

d. Put a checkmark next to the part that shows the solution works.

Luna's Solution

Hi, I'm Luna. Here's how I solved this problem.

- **I already know** the decimals for what fraction of the jar to fill with purple and pink. **I need to find** what fraction of the jar should be yellow.

- **The whole jar was 2 cups and yellow was less than 1 cup.**
  1 cup is half of the jar.
  Less than 1 cup means less than $\frac{1}{2}$ of the jar is yellow.

I had to choose either fractions or decimals. I chose fractions because I like them!

- **I can list all the information with fractions.**
  pink: less than 0.4, so less than $\frac{4}{10}$ of the jar.
  purple: more than 0.2, so more than $\frac{2}{10}$ of the jar.
  yellow: less than $\frac{1}{2}$, so less than $\frac{5}{10}$ of the jar.

- **I can make a diagram with 10 equal parts.**
  Then color it to find 3 fractions that are the right size and total $\frac{10}{10}$.

pink: $\frac{3}{10} < \frac{4}{10}$

purple: $\frac{3}{10} > \frac{2}{10}$

yellow: $\frac{4}{10} < \frac{5}{10}$

I drew a diagram to show all the parts and organize my thinking.

- **I can write an equation to show the sum is equivalent to 1.**
  $\frac{3}{10} + \frac{3}{10} + \frac{4}{10} = \frac{10}{10}$

$\frac{10}{10} = 1$, so my fractions work.

- **So, here are instructions for any size jar.**
  Fill any jar $\frac{3}{10}$ with pink sand, $\frac{3}{10}$ with purple sand and $\frac{4}{10}$ with yellow sand.

Try Another Approach

There are many ways to solve problems. Think about how you might solve the Sand Jars problem in a different way.

Sand Jars

Luna made these notes after she made a sand art design in a 2-cup jar.

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Luna wants to write specific instructions for making the same kind of design that would work for a jar of any size.

- Find fractions or decimals to tell exactly what part of each jar to fill with pink, purple, and yellow sand.
- Write instructions using those numbers.

Plan It **Answer these questions to help you start thinking about a plan.**

A. The example solution showed how to write all the amounts as fractions. How you could write all of the amounts as decimals? Explain and show.

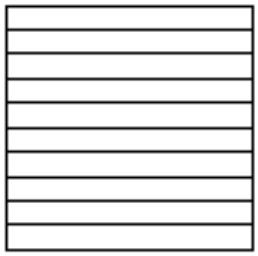
B. There is more than one possible solution for this task. Look back at the problem. How you can tell that a different solution is possible? Explain.

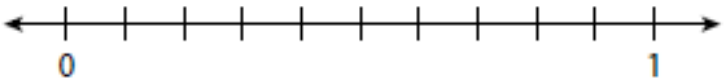
Solve It Find a different solution for the Sand Jars problem. Show all your work on a separate sheet of paper.

You may want to use the problem-solving tips to get started.

Problem-Solving Tips

- **Models**





- **Word Bank**

fraction	greater than	whole
decimal	less than	equivalent

- **Sentence Starters**
  - I can write fractions as _____
  - _____ is less than _____

Problem-Solving Checklist

Make sure that you . . .

- ☐ tell what you know.
- ☐ tell what you need to do.
- ☐ show all your work.
- ☐ show that the solution works.

Reflect

Use Mathematical Practices As you work through the problem, discuss these questions with a partner.

- **Use Structure** How can you use the relationship between fractions and decimals to solve the problem?
- **Use Repeated Reasoning** Can you think of problems that you have solved before that could help you solve this problem? Explain.

Discuss

Models and Strategies

Read the problem. Write a solution on a separate sheet of paper. Remember, there are lots of ways to solve a problem!

Coin Purses

Luna wants to make and sell small coin purses with gold braid around the perimeter. She will show a sample of each of the two styles at a craft fair. If people like them, she will make more.

Here are Luna's notes about the two styles.

Square style:
all sides are $2\frac{1}{2}$ inches

Rectangle style:
sides are $3\frac{1}{4}$ inches and $2\frac{1}{4}$ inches

Note: I will have to cut pieces of braid to fit, but I won't put together two small pieces for one side.

Length (inches)	Cost (dollars)
2	$2
4	$4
6	$6
8	$8
10	$10
12	$11
20	$17

Luna needs to buy enough gold braid to make one sample purse for each design. She wants to spend as little as possible.

How can Luna use this price chart to decide what lengths of gold braid to buy?

Plan It and Solve It **Find a solution for Luna's Coin Purses problem.**

Write a detailed plan and support your answer. Be sure to include:

- a diagram.
- the lengths of gold braid Luna should buy.
- how you used the cost to help make your decision.

You may want to use the problem-solving tips to get started.

Problem-Solving Tips

Questions

- What are some steps that I might take to solve the problem?
- What step should I do first? Why?

Word Bank

length	rectangle	whole
cost	square	perimeter

Sentence Starters

- The lengths of gold braid needed for each design is _____
- The total length of gold braid is _____
- The perimeter of the square is _____
- I can add _____

Problem-Solving Checklist

Make sure that you . . .

- ☐ tell what you know.
- ☐ tell what you need to do.
- ☐ show all your work.
- ☐ show that the solution works.

Reflect

Use Mathematical Practices As you work through the problem, discuss these questions with a partner.

- **Make Sense of Problems** How can you decide what to do first?
- **Make an Argument** What can you do to support your plan to show that it makes sense?

Persevere

On Your Own

Read the problems. Write a solution on a separate sheet of paper. Remember, there are many different ways to solve a problem!

Hair Ribbons

Luna is teaching 3 friends how to make hair ribbons. She plans to use leftover ribbons from another project. She will share the ribbon between the 3 friends so they all get the same total length of ribbon. Luna's notes and the lengths of the pieces of ribbon she has are shown below.

- Cut the ribbons so each friend gets the same total length.
- Cut the pieces to be as long as possible.
- It doesn't matter how many pieces of ribbon each friend receives.
- It doesn't matter what color ribbon each friend receives.
- There are $4\frac{3}{4}$ feet of the blue ribbon, $6\frac{1}{4}$ feet of the purple ribbon, and 10 feet of the green ribbon.

How should Luna cut the ribbons?

Solve It

Suggest a way that Luna could cut the ribbons so that each friend gets the same total length.

Tell the number of pieces of ribbon each friend gets and the length of each piece. Explain how you got your answer, and how you made your decision.

Reflect

Use Mathematical Practices After you complete the task, choose one of these questions to discuss with a partner.

- **Persevere** Did you try approaching the task in different ways before deciding on a plan? Explain.
- **Real-Life Problems** Did you think about a real-life situation that is like this problem? Describe it.

Sports Picture Frame

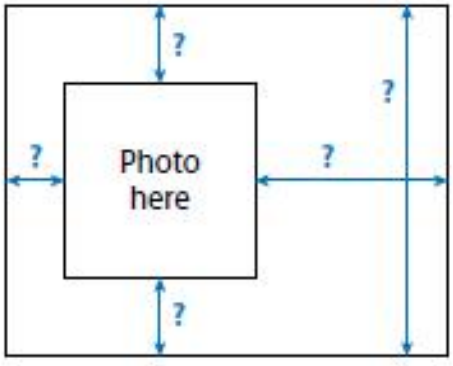
Luna is designing a sports picture frame. Below are her instructions.

- Paint 6 craft sticks . Each stick is $\frac{3}{4}$ inch wide and $5\frac{3}{4}$ inches long.
- Glue the craft sticks side-by-side on a piece of cardboard.
- Glue a photograph $2\frac{1}{4}$ inches wide and $2\frac{1}{4}$ inches tall on the frame.
- Leave a space at least $2\frac{2}{4}$ inches wide to the right of the photo. Put your decorations here.
- There needs to be at least $\frac{2}{4}$ inch of space above and below the photo.

Will Luna's plan work?

Solve It **Help Luna design the picture frame.**

- Copy the outline of the frame at the right and fill in all the measurements.
- Show and explain why your measurements work.



Reflect

Use Mathematical Practices After you complete the task, choose one of these questions to discuss with a partner.

- **Use a Model** How did the frame outline help you solve the problem?
- **Make an Argument** How did you show that your measurements work?

Solve the problems.

1 There are 6 plates on a table. Each plate has $\frac{1}{2}$ of an apple on it. Which equation does NOT show how many whole apples there are altogether?

A $6 \times \frac{1}{2} = 3$

B $6 \times \frac{1}{2} = \frac{6}{2}$

C $\frac{1}{2} \times 6 = \frac{3}{1}$

D $\frac{1}{2} \times 6 = \frac{3}{6}$

2 Three sections of a fence need to be painted. Each section of the fence is made of 4 equal-sized boards. Alex paints $\frac{1}{6}$ of the fence. Bobby paints twice as much as Alex. Charles paints only 1 board. David paints the rest.

Who paints the largest part of the fence? _____

What fraction of the fence did he paint? _____

3 Emily made this table to show the number of pets owned by each of the 12 students in her dance class.

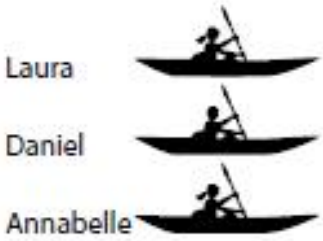
Student	A	B	C	D	E	F	G	H	I	J	K	L
Number of Pets	3	1	2	0	3	1	4	5	1	8	4	3

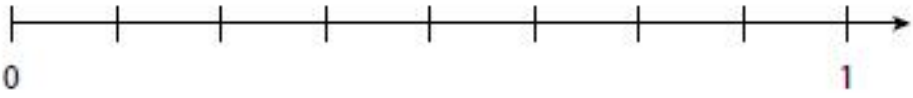
What fraction of the students own 3 or more pets? _____

4 Three people are kayaking. They all started at the same point and rowed in the same direction for 20 minutes.

- Laura rowed $\frac{7}{8}$ mile.
- Daniel rowed $\frac{1}{2}$ mile.
- Annabelle rowed $\frac{1}{4}$ mile.

Draw a line from each person to show the distance he or she rowed.





Use $<$, $>$, or $=$ to compare the combined distance Daniel and Annabelle rowed to the distance Laura rowed. _____

5 Jake and Sara each bought a carton of eggs. Some of the eggs were broken and some were not.

Jake's carton has:
- a total of 6 eggs, and
- exactly 2 broken eggs.

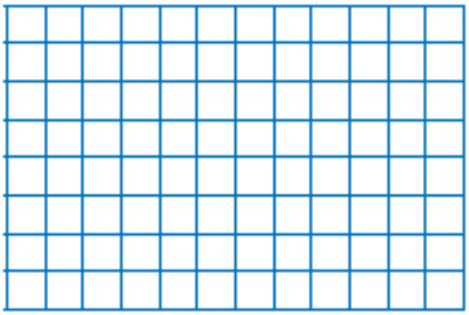
Sara's carton has:
- a total of 18 eggs, and
- exactly _____ broken eggs.

Sara had the same fraction of broken eggs in her carton as Jake had in his carton. In the space below, draw pictures of the eggs in Jake's carton and the eggs in Sara's carton. Write the fraction of broken and unbroken eggs in each carton.

Performance Task

Answer the questions and show all your work on separate paper.

The fourth-grade classes in Hannah's school are making a quilt as a gift to the senior center in their community. The quilt is going to be made up of squares that students and teachers design and sew. The final quilt will be 8 squares by 12 squares.



24 of the squares will be made by teachers and will be white. The students will make the remaining squares. Each class has chosen a different color for their squares. Below is Hannah's plan for dividing the work.

- $\frac{1}{4}$ of the student squares will be made by the red class.
- $\frac{1}{3}$ of the student squares will be made by the blue class.
- $\frac{2}{3}$ of the student squares will be made by the green class.
- $\frac{1}{4}$ of the student squares will be made by the yellow class.

Hannah's teacher says Hannah's plan won't work. Explain what is wrong with Hannah's plan. Make a better plan and describe it using fractions as well as a diagram.

Checklist

Did you . . .

- ☐ use complete sentences in your explanation?
- ☐ draw a diagram?
- ☐ check that your plan makes sense?

Reflect

Use Mathematical Practices After you complete the task, choose one of the following questions to answer.

- **Reason Mathematically** What information did you need to find before deciding how to split up the student squares?
- **Argue and Critique** There are 5 groups making squares for this quilt: teachers and four classes. Could Hannah divide the work so that each group makes $\frac{1}{5}$ of the total number of squares? Explain your answer.