Fractions as Tenths and Hundredths
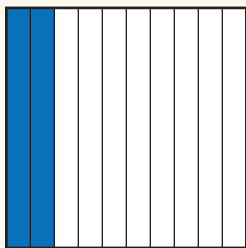
Dear Family,

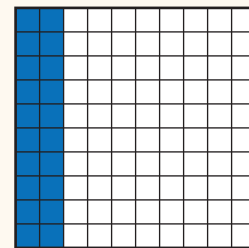**This week your child is learning about fractions as tenths and hundredths.**

Your child might see a problem such as $\frac{2}{10} + \frac{30}{100}$. One fraction in the problem has a denominator of 10. The other fraction has a denominator of 100.

Your child is learning how to write **tenths** fractions as equivalent **hundredths** fractions. $\frac{1}{10} = \frac{10}{100}$
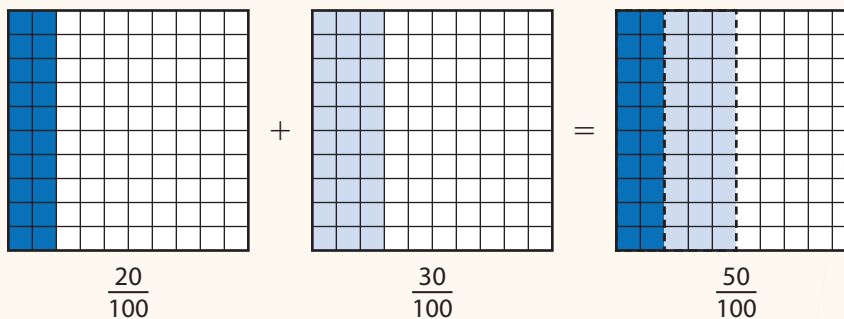
This model shows $\frac{2}{10}$.

This model shows $\frac{20}{100}$.

The models show equivalent fractions.
$$\frac{2}{10} = \frac{20}{100}$$

To add $\frac{2}{10}$ and $\frac{30}{100}$, show $\frac{2}{10}$ as $\frac{20}{100}$. Then show $\frac{30}{100}$ more.

$$\frac{20}{100} \quad + \quad \frac{30}{100} \quad = \quad \frac{50}{100}$$

$\frac{20}{100} + \frac{30}{100} = \frac{50}{100}$, and $\frac{2}{10} + \frac{30}{100} = \frac{50}{100}$.

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

ACTIVITY FRACTIONS AS TENTHS AND HUNDREDTHS

Do this activity with your child to explore fractions as tenths and hundredths.

- Use the tenths and hundredths models below or make your own models using lined paper and grid paper.

- Have your child choose a number between 1 and 5. Your child shades the tenths model to show that number of tenths.

  Example: Your child chooses 4.
  Your child shades 4 tenths $\left(\frac{4}{10}\right)$ of the tenths model.

- Then have another family member choose a two-digit number between 10 and 50. Your child shades the hundredths model to show that number of hundredths.
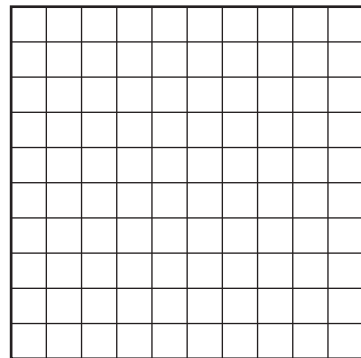
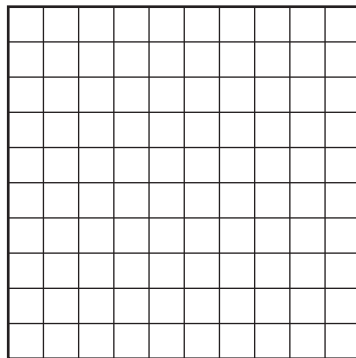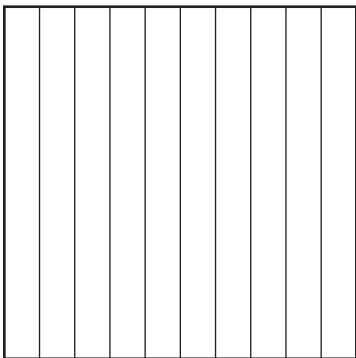 *Example:* A family member chooses 28.
  Your child shades $\frac{28}{100}$ of the hundredths model.

- Next, have your child add the fractions. Your child shades the other hundredths model to show the sum.

  Example: $\frac{4}{10} + \frac{28}{100}$
  $\frac{40}{100} + \frac{28}{100} = \frac{68}{100}$
  Your child shades $\frac{68}{100}$ of the other hundredths model.

Explore Fractions as Tenths and Hundredths

Previously, you worked with equivalent fractions. This lesson will focus on equivalent fractions with denominators of 10 and 100. Use what you know to try to solve the problem below.

> **Doss rides his bike home. He has seven tenths of a mile left to ride. Write an equivalent fraction to show how far Doss has left to ride in hundredths of a mile.**

Learning Target

- Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100.

SMP 1, 2, 3, 4, 5, 6, 7

TRY IT

Math Toolkit
- base-ten blocks
- tenths grids
- hundredths grids
- number lines
- index cards

DISCUSS IT

Ask your partner: Why did you choose that strategy?

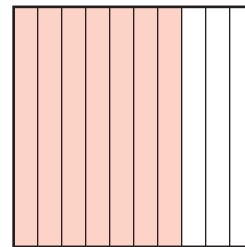**Tell your partner:** I knew . . . so I . . .

CONNECT IT

1 LOOK BACK

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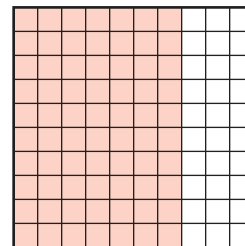
2 LOOK AHEAD

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

a. The model at the right is divided into 10 equal parts, or **tenths**. How many parts are shaded? ....

b. If you split each tenth into 10 equal parts, the whole is now divided into 100 equal parts, or **hundredths**.

How many hundredths parts are shaded? ....

c. Complete the equation to show a fraction with denominator 100 that is equivalent to $\frac{7}{10}$.

$$\frac{7}{10} = \frac{7 \times \boxed{}}{10 \times \boxed{}} = \frac{\boxed{}}{100}$$

d. 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. Fill in the blanks.

$$1 \text{ dime} = \boxed{} \text{ cents} = \frac{\boxed{}}{100} \text{ of a dollar}$$

$$1 \text{ dime} = \frac{\boxed{}}{10} \text{ of a dollar}$$

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

3 REFLECT

How can you use equivalent fractions to write tenths as hundredths?

....

....

Prepare for Fractions as Tenths and Hundredths

1 Think about what you know about fractions. Fill in each box. Use words, numbers, and pictures. Show as many ideas as you can.

Word	In My Own Words	Example
numerator		
denominator		
tenths		
hundredths		

2 Write seven tenths and seven hundredths as fractions. Tell how the two fractions are alike and how they are different.

3 Solve the problem. Show your work.

Akiko jogs to the park. She has six tenths of a mile left to jog. Write an equivalent fraction to show how far Akiko has left to jog in hundredths of a mile.

Solution ....

4 Check your answer. Show your work.

Develop Adding Tenths and Hundredths Fractions

Read and try to solve the problem below.

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

TRY IT

Math Toolkit
- base-ten blocks
- play money
- tenths grids
- hundredths grids
- number lines

DISCUSS IT

Ask your partner: How did you get started?

Tell your partner: At first, I thought . . .

Explore different ways to understand how to add fractions with denominators of 10 and 100.

Carmen has $\frac{4}{10}$ of a dollar. Troy 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.

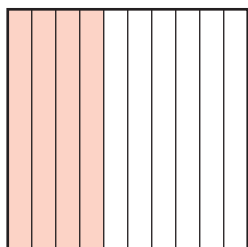Carmen's money

Troy's money

Together, Carmen and Troy have 9 dimes.

MODEL IT

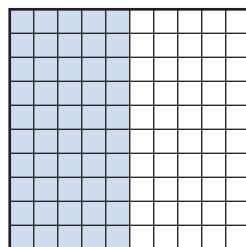**You can use a model to help you add fractions with denominators of 10 and 100.**
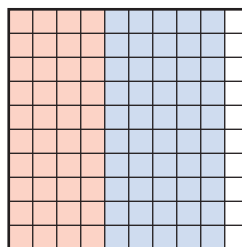

Carmen's money   Troy's money   Total money

$\frac{4}{10}$ + $\frac{50}{100}$ =   ?

CONNECT IT

Now you will use the problem from the previous page to help you understand how to add fractions with denominators of 10 and 100.

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

2 Complete the equation to use multiplication to find the fraction with denominator 100 that is equivalent to $\frac{4}{10}$.

$$\frac{4}{10} = \frac{4 \times \boxed{}}{10 \times \boxed{}} = \frac{\boxed{}}{\boxed{}}$$

3 $\frac{40}{100} + \frac{50}{100} = \text{\dotfill}$

4 Together, Carmen and Troy have what fraction of a dollar? \dotfill

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

6 REFLECT

Look back at your **Try It**, strategies by classmates, and **Picture It** and **Model It**. Which models or strategies do you like best for adding fractions with denominators of 10 and 100? Explain.

\dotfill

\dotfill

\dotfill

\dotfill

APPLY IT

Use what you just learned to solve these problems.

7 Giselle spends $\frac{7}{10}$ of her money on a book and $\frac{10}{100}$ of her money on food. What fraction of her money does she spend in all? Show your work.
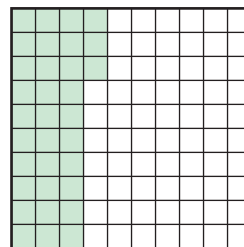
Solution ....

8 Show how to add $\frac{4}{10}$ and $\frac{19}{100}$. Write the sum. Show your work.

Solution ....

9 Tucker is weeding his garden. The shaded model at the right represents the fraction of the garden that Tucker has already weeded.

Tucker plans to weed $\frac{5}{10}$ more of the garden before lunch. What fraction of the garden will Tucker have weeded before lunch?

Ⓐ $\frac{38}{100}$

Ⓑ $\frac{83}{100}$

Ⓒ $\frac{38}{110}$

Ⓓ $\frac{83}{10}$

Practice Adding Tenths and Hundredths Fractions

Study the Example showing how to add fractions with denominators of 10 and 100. Then solve problems 1–7.

EXAMPLE

Jaden finds $\frac{8}{10}$ of a dollar in change in his backpack.

He finds $\frac{15}{100}$ of a dollar in change in his lunch bag.

What fraction of a dollar in change does he find altogether?

Multiply to find the fraction with denominator 100 that is equivalent to $\frac{8}{10}$.

$$\frac{8}{10} = \frac{8 \times 10}{10 \times 10} = \frac{80}{100}$$

Add the hundredths fractions.

$$\frac{80}{100} + \frac{15}{100} = \frac{95}{100}$$

Jaden finds $\frac{95}{100}$ of a dollar in change.

1 Write $\frac{2}{10}$ as an equivalent fraction with a denominator of 100.

$$\frac{2}{10} = \frac{2 \times 10}{10 \times 10} = \frac{\boxed{}}{\boxed{}}$$

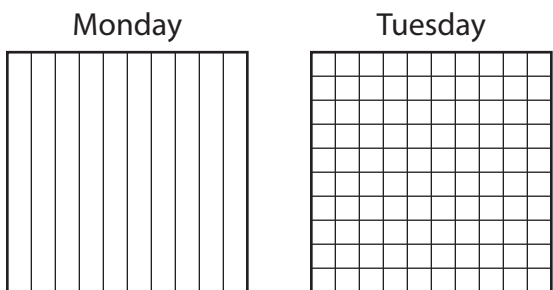2 Fill in the blanks to show how to find the sum of $\frac{2}{10}$ and $\frac{10}{100}$.

$$\frac{\boxed{}}{100} + \frac{10}{100} = \frac{\boxed{}}{\boxed{}}$$

3 What is the sum of $\frac{3}{10}$ and $\frac{50}{100}$? Show your work.

Solution ....

Mila has 100 math problems to finish this week. She finishes $\frac{2}{10}$ of the problems on Monday and $\frac{25}{100}$ of the problems on Tuesday.

④ Shade the models to show the fraction of math problems that Mila finishes on Monday and on Tuesday.

Monday   Tuesday

⑤ What fraction of the math problems for the week does Mila finish on Monday and Tuesday? Show your work.

Solution

⑥ Look at problem 5. Is the sum you found greater or less than $\frac{1}{2}$? Explain.

⑦ Has Mila finished more than half of her math problems for the week? Explain.

Refine Fractions as Tenths and Hundredths

Complete the Example below. Then solve problems 1–10.

EXAMPLE

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

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

Corn — Beans
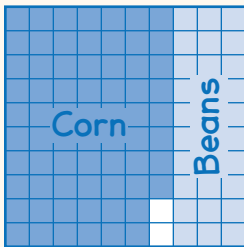
Solution ....

> 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?

APPLY IT

1 What is the sum of $\frac{7}{100}$ and $\frac{1}{10}$? Show your work.

> There is more than one way to solve this problem!

PAIR/SHARE
Can you explain the problem using dimes and pennies?

Solution ....

2 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?

Solution ....

3 Heath has 100 trading cards. Space exploration cards make up $\frac{7}{100}$ of his card collection. Baseball cards make up $\frac{7}{10}$ of his card collection. Together, the space exploration and baseball cards make up what fraction of Heath's card collection?

Ⓐ $\frac{7}{110}$

Ⓑ $\frac{14}{100}$

Ⓒ $\frac{77}{200}$

Ⓓ $\frac{77}{100}$

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

PAIR/SHARE
Draw a model to show the problem situation.

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

PAIR/SHARE
Chelsea chose Ⓓ. How did she get that answer?

4 Which equation is true?

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

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

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

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

5 Noelle rides her bike $\frac{5}{10}$ of a kilometer to the library. Then she rides another $\frac{22}{100}$ of a kilometer to her friend's house. How far does Noelle ride her bike in all?

Ⓐ $\frac{27}{110}$ of a kilometer

Ⓑ $\frac{27}{100}$ of a kilometer

Ⓒ $\frac{72}{100}$ of a kilometer

Ⓓ $\frac{225}{100}$ kilometers

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

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

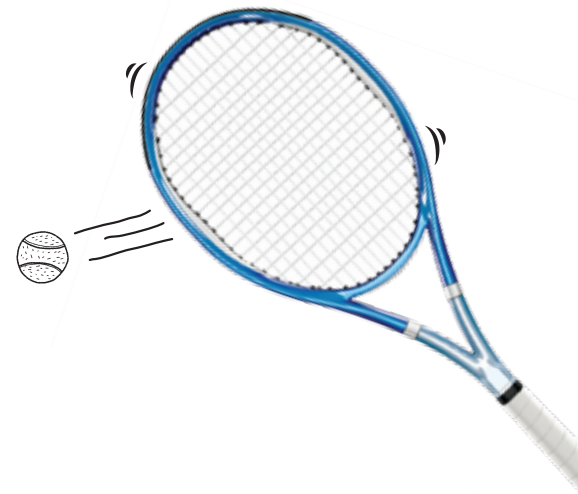**7** What is the missing fraction in the equation below? Show your work.

$$\frac{6}{10} + \square = \frac{82}{100}$$

Solution ···

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

	True	False
$\frac{2}{10} + \frac{1}{100} = \frac{21}{110}$	Ⓐ	Ⓑ
$\frac{4}{10} + \frac{4}{100} = \frac{44}{100}$	Ⓒ	Ⓓ
$\frac{1}{100} + \frac{9}{10} = \frac{19}{100}$	Ⓔ	Ⓕ

9 Ramona has $100. She spends $\frac{60}{100}$ of her money on a pair of sneakers. She spends $\frac{3}{10}$ of her money on a tennis racket. What fraction of her money does Ramona spend? Show your work.

Ramona spends .... of her money.

10 MATH JOURNAL

Use words, equations, or pictures to explain how to solve the problem below.

Jasmine walks $\frac{6}{10}$ of a mile to school. Then she walks another $\frac{29}{100}$ of a mile to the library. How far does Jasmine walk in all?

☑ SELF CHECK Go back to the Unit 4 Opener and see what you can check off.