Name _____

Relate Hundredths and Decimals

Essential Question How can you record hundredths as fractions and decimals?

Unlock the Problem Real World

In the 2008 Summer Olympic Games, the winning time in the men's 100-meter butterfly race was only $\frac{1}{100}$ second faster than the second-place time. What decimal represents this fraction of a second?
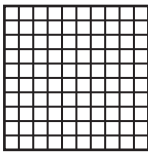
You can write hundredths as fractions or decimals.

• Circle the numbers you need to use.

One Way Use a model and a place-value chart.

Fraction

Shade $\frac{1}{100}$ of the model.

Think: The model is divided into 100 equal parts. Each part represents one **hundredth**.

Write: _____

Read: one hundredth

Decimal

Complete the place-value chart. $\frac{1}{100}$ is 1 hundredth.

Ones	.	Tenths	Hundredths
0	.	0	1

Write: _____

Read: one hundredth

Another Way Use a number line.

Label the number line with equivalent decimals. Locate the point $\frac{1}{100}$.

$\frac{1}{100}$

$\frac{0}{100}$ $\frac{10}{100}$ $\frac{20}{100}$ $\frac{30}{100}$ $\frac{40}{100}$ $\frac{50}{100}$ $\frac{60}{100}$ $\frac{70}{100}$ $\frac{80}{100}$ $\frac{90}{100}$ $\frac{100}{100}$

0.00   0.10   0.20   1.00
   0.01
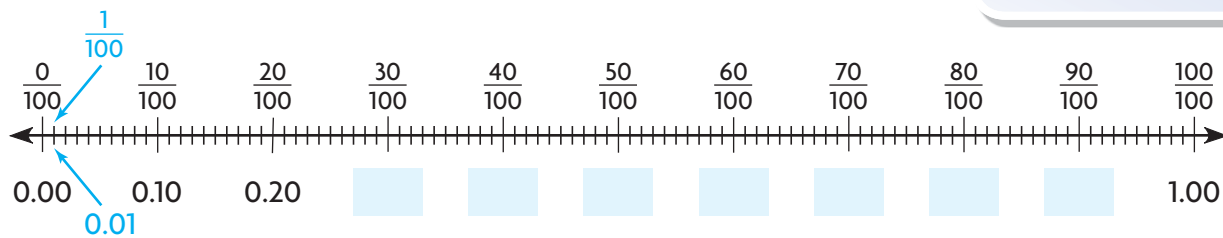
_____ names the same amount as $\frac{1}{100}$.
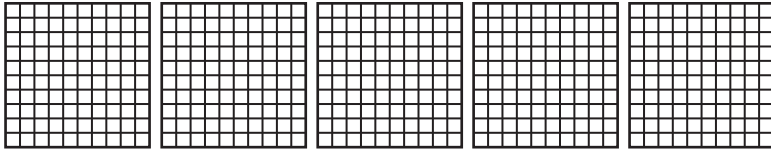
So, the winning time was _____ second faster.

Math Talk   MATHEMATICAL PRACTICES ②

Use Reasoning How is the size of one tenth related to the size of one hundredth?

Alicia won her 400-meter freestyle race by $4\frac{25}{100}$ seconds. How can you write this mixed number as a decimal?

🔑 One Way Use a model and a place-value chart.

Mixed Number

Shade the model to show $4\frac{25}{100}$.

Write: _____

Read: four and twenty-five hundredths
_____

Decimal

Complete the place-value chart.

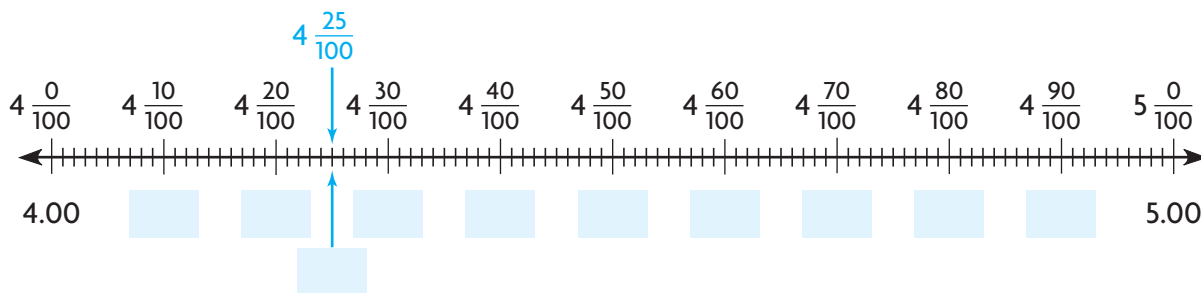**Think:** Look at the model above. $4\frac{25}{100}$ is 4 wholes and 2 tenths 5 hundredths.

Ones	.	Tenths	Hundredths
	.		

Write: _____

Read: _____

🔑 Another Way Use a number line.

Label the number line with equivalent mixed numbers and decimals. Locate the point $4\frac{25}{100}$.

$4\frac{25}{100}$

$4\frac{0}{100}$ $4\frac{10}{100}$ $4\frac{20}{100}$ $4\frac{30}{100}$ $4\frac{40}{100}$ $4\frac{50}{100}$ $4\frac{60}{100}$ $4\frac{70}{100}$ $4\frac{80}{100}$ $4\frac{90}{100}$ $5\frac{0}{100}$

4.00 [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] 5.00

[ ]

_____ names the same amount as $4\frac{25}{100}$.

So, Alicia won her race by _____ seconds.

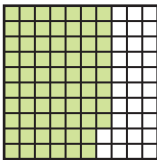Name _____

1. Shade the model to show $\frac{31}{100}$.

Write the amount as a decimal. _____
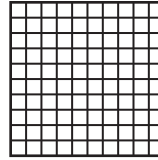
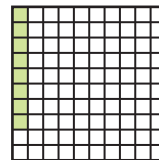| Ones	.	Tenths	Hundredths
	.		

Write the fraction or mixed number and the decimal shown by the model.

✔**2.** _____ _____

3. _____ _____

✔**4.**

$6\frac{0}{100}$ $6\frac{50}{100}$ $7\frac{0}{100}$

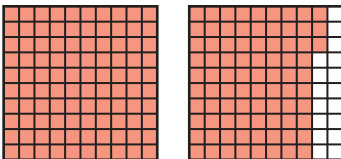6.00   6.50   7.00

_____ _____

Math Talk

MATHEMATICAL PRACTICES ⑦
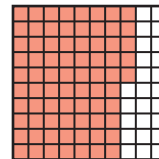
Look for Structure Are 0.5 and 0.50 equivalent? Explain.

On Your Own

Write the fraction or mixed number and the decimal shown by the model.

5. _____ _____

6. _____ _____

7.

$\frac{0}{100}$ $\frac{50}{100}$ $\frac{100}{100}$

0.00   0.50   1.00

_____ _____

Practice: Copy and Solve Write the fraction or mixed number as a decimal.

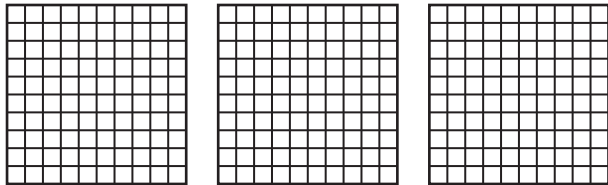**8.** $\frac{9}{100}$ **9.** $4\frac{55}{100}$ **10.** $\frac{10}{100}$ **11.** $9\frac{33}{100}$ **12.** $\frac{92}{100}$ **13.** $14\frac{16}{100}$
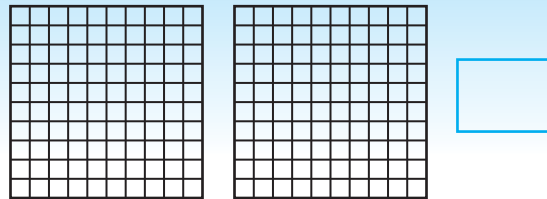
Problem Solving • Applications (Real World)

14. **THINK SMARTER** Shade the grids to show three different ways to represent $\frac{16}{100}$ using models.

15. **MATHEMATICAL PRACTICE ①** Describe Relationships
Describe how one whole, one tenth, and one hundredth are related.

_____

_____

_____

16. **THINK SMARTER** Shade the model to show $1\frac{24}{100}$. Then write the mixed number in decimal form.

17. **GO DEEPER** The Memorial Library is 0.3 mile from school. Whose statement makes sense? Whose statement is nonsense? Explain your reasoning.

> I am going to walk 3 tenths mile to the Memorial Library after school.

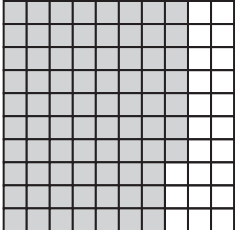> I am going to walk 3 miles to the Memorial Library after school.
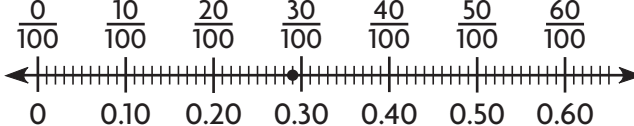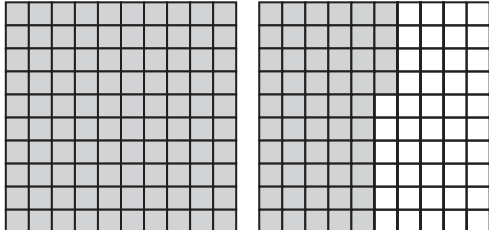
Gabe

_____

_____

_____

_____

Tara

_____

_____

_____
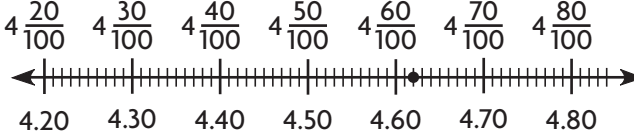
_____

Relate Hundredths and Decimals

Write the fraction or mixed number and the decimal shown by the model.

1. Think: The whole is divided into one hundred equal parts, so each part is one hundredth.

$\frac{77}{100}$; 0.77

2.

$\frac{0}{100}$ $\frac{10}{100}$ $\frac{20}{100}$ $\frac{30}{100}$ $\frac{40}{100}$ $\frac{50}{100}$ $\frac{60}{100}$

0   0.10   0.20   0.30   0.40   0.50   0.60

3.

4.

$4\frac{20}{100}$ $4\frac{30}{100}$ $4\frac{40}{100}$ $4\frac{50}{100}$ $4\frac{60}{100}$ $4\frac{70}{100}$ $4\frac{80}{100}$

4.20   4.30   4.40   4.50   4.60   4.70   4.80

Write the fraction or mixed number as a decimal.

5. $\frac{37}{100}$ **6.** $8\frac{11}{100}$ **7.** $\frac{98}{100}$ **8.** $25\frac{50}{100}$ **9.** $\frac{6}{100}$
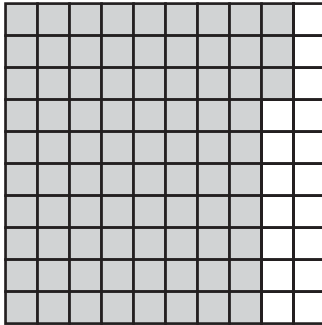
Problem Solving Real World

10. There are 100 pennies in a dollar. What fraction of a dollar is 61 pennies? Write it as a fraction, as a decimal, and in word form.

11. **WRITE** *Math* Describe a situation where it is easier to use decimals than fractions, and explain why.

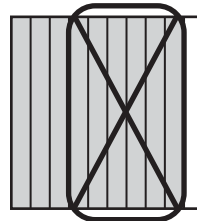1. What decimal represents the shaded section of the model below?

2. There were 100 questions on the unit test. Alondra answered 97 of the questions correctly. What decimal represents the fraction of questions Alondra answered correctly?

_____

_____

Spiral Review (4.OA.C.5, 4.NF.B.3b, 4.NF.B.3d, 4.NF.B.4c)

3. Write an expression that is equivalent to $\frac{7}{8}$.

4. What is $\frac{9}{10} - \frac{6}{10}$?

_____

_____

5. Misha used $\frac{1}{4}$ of a carton of 12 eggs to make an omelet. How many eggs did she use?

6. Kurt used the rule *add* 4, *subtract* 1 to generate a pattern. The first term in his pattern is 5. Write a number that could be in Kurt's pattern.

_____

_____

**FOR MORE PRACTICE
GO TO THE
Personal Math Trainer**