Understand
Decimal Place Value

Name: _____

Prerequisite: How do you show decimals with place-value models and charts?
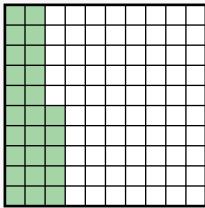
Study the example modeling a decimal using a place-value model and chart. Then solve problems 1–6.

Example

How can you model the decimal 0.25 two different ways?

The hundredths grid represents 1 whole.

Ones	•	Tenths	Hundredths
0	.	2	5

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1 Complete the sentences to show the value of the digits in the decimal 0.25 from the example above.
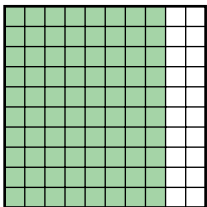
The 2 has a value of 2 _____ , or 0.2.

The 5 has a value of 5 _____ , or 0.05.
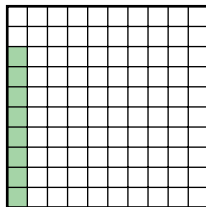
2 Write the decimal 0.25 in word form.

_____

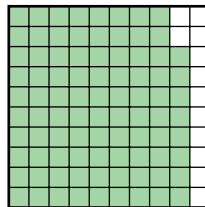**3** Write a number from the box to describe the shaded part of each model.

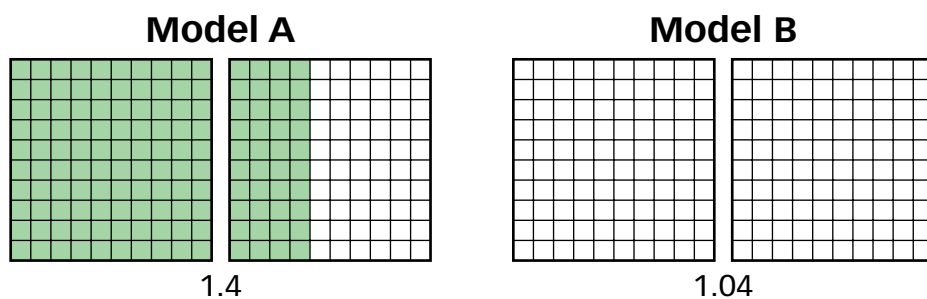| 0.08 | 0.88 | 0.8 |

_____   _____   _____

Solve.

4 How is shading a hundredths grid to show 1 tenth different from shading a hundredths grid to show 1 hundredth?

_____

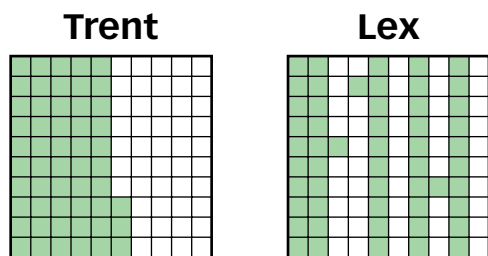_____

_____

5 Model A shows the decimal 1.4. Shade Model B to show the decimal 1.04.

Model A

1.4

Model B

1.04

6 Trent and Lex each shade a hundredths grid to show the decimal 0.53.

Their grids are shown below.

Trent   **Lex**

Do both grids show the decimal 0.53? Which grid is faster to check? Explain.
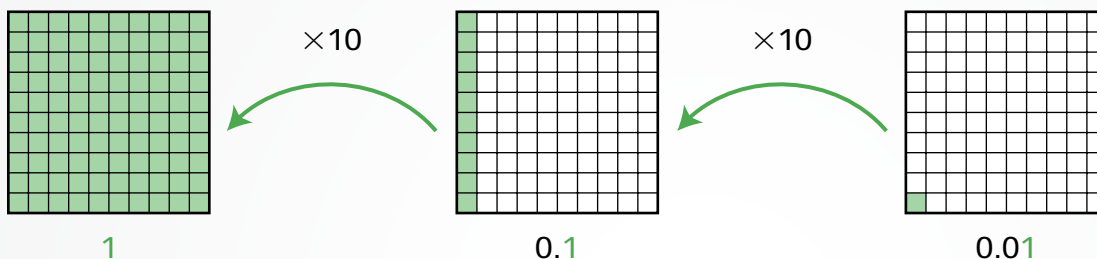
_____

_____

_____

_____

Name: _____

Place-Value Patterns

Study how the example shows place-value patterns.
Then solve problems 1–8.

Example

Show how the numbers 1, 0.1, and 0.01 are related.

| 1 | 0.1 | 0.01 |

1 Use the ×10 pattern from the example to complete each equation.

_____ = 1 × 10

1 = _____ × 10

0.1 = _____ × 10

2 The pattern can also be described using division. Use the hundredths grids in the example to complete the equations.

10 ÷ 10 = _____

1.0 ÷ 10 = _____

0.1 ÷ 10 = _____

3 Use the ÷10 pattern to fill in the blanks.

400 _____ _____ 0.4 _____

4 How are the decimals 0.009 and 0.09 related? Explain.

_____

_____

_____

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Solve.

5 Select yes or no to tell whether the expression is equivalent to 0.07.

	Yes	**No**
0.007 × 10	Ⓐ	Ⓑ
0.7 ÷ 10	Ⓒ	Ⓓ
0.07 × 10	Ⓔ	Ⓕ
0.007 ÷ 10	Ⓖ	Ⓗ

6 Describe the shaded section of the hundredths grid model two different ways. Fill in the missing information below.

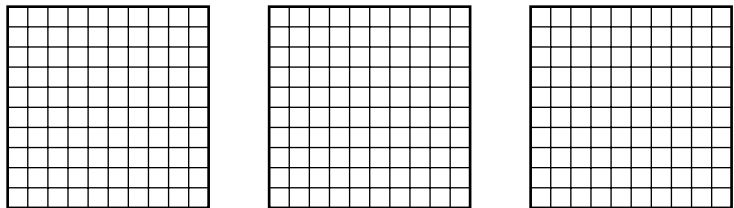**a.** 8 tenths = _____

b. _____ hundredths = 0.80

7 Choose a symbol from the box to show the relationship between 0.8 and 0.80.

<	>	=

0.8 ◯ 0.80

8 Shade some or all of the hundredths grids to show that 2 ones is the same as 20 tenths. Explain.

_____

_____

_____

_____

Name: _____

Reason and Write

Study the example. Underline two parts that you think make it a particularly good answer and a helpful example.

Example

Clara knows that each time a digit moves one place to the right in a whole number, the value of the digit is one-tenth as much.
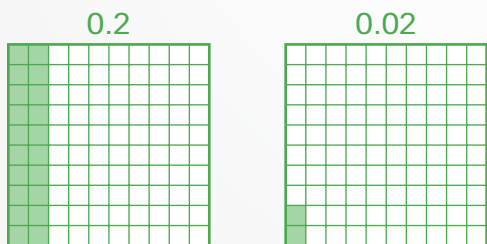
Describe an example you would show to Clara to demonstrate that this is true for decimal numbers also.

Show your work. Use pictures, words, or numbers to explain.

I would show Clara an example using the decimal 0.2.

If you move the digit 2 in 0.2 one place to the right, the decimal is now 0.02.

The digit 2 in the decimal 0.02 has a value that is one tenth as much as the digit 2 in the decimal 0.2. I can show this to Clara using hundredths grid models.

0.2   0.02

0.2 has 20 shaded squares and 0.02 has 2 shaded squares. Since 2 squares are one tenth of 20 squares, the models show that 0.02 is one tenth the value of 0.2.

Where does the example . . .
- *use a picture to explain?*
- *use words to explain?*
- *use numbers to explain?*

Solve the problem. Use what you learned from the example.

Leo knows that each time a digit moves one place to the left in a whole number, the value of the digit is 10 times as much.

Describe an example you would show to Leo to demonstrate that this is true for decimal numbers also.

Show your work. Use pictures, words, or numbers to explain your answer.

Did you . . .

- use a picture to explain?

- use words to explain?

- use numbers to explain?