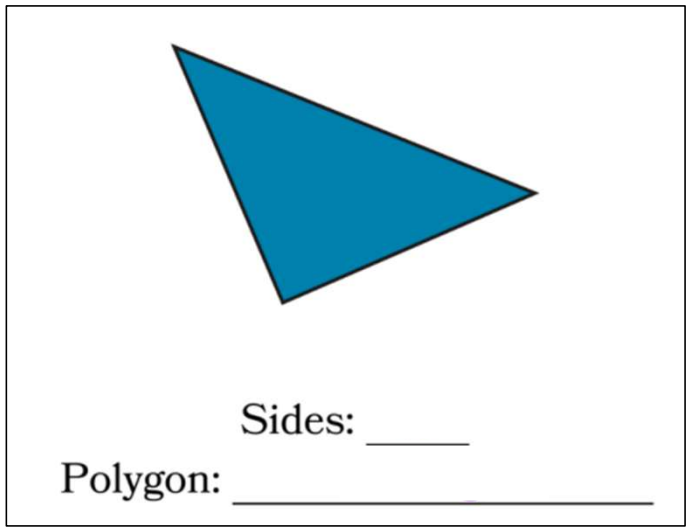
# Module 4 - Lesson 23:

**Relate division by 0.1 and 0.01 to division by a unit fraction.**

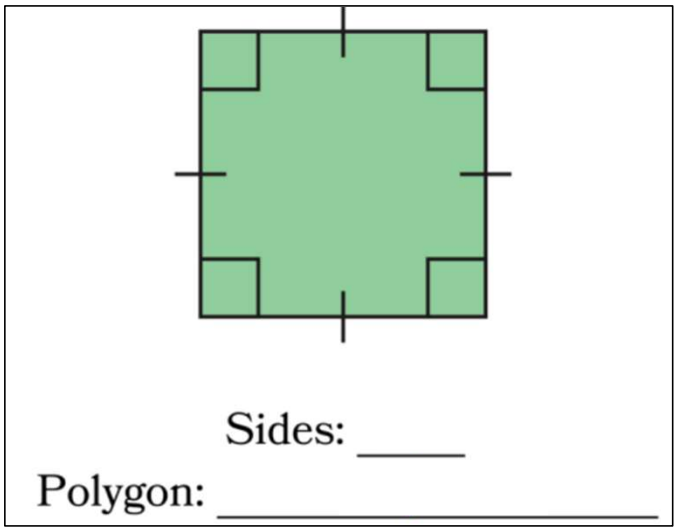
**CCSS Standard – 5.NBT.B.7**

**FLUENCY (10-min)** **Choral Response: Polygons and Sides**

**Raise your hand when you know the answer to each question.**
**Wait for my signal to say the answer.**




**How many sides?**
**What is the name of the polygon?**

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**FLUENCY (10-min)** **Choral Response: Polygons and Sides**

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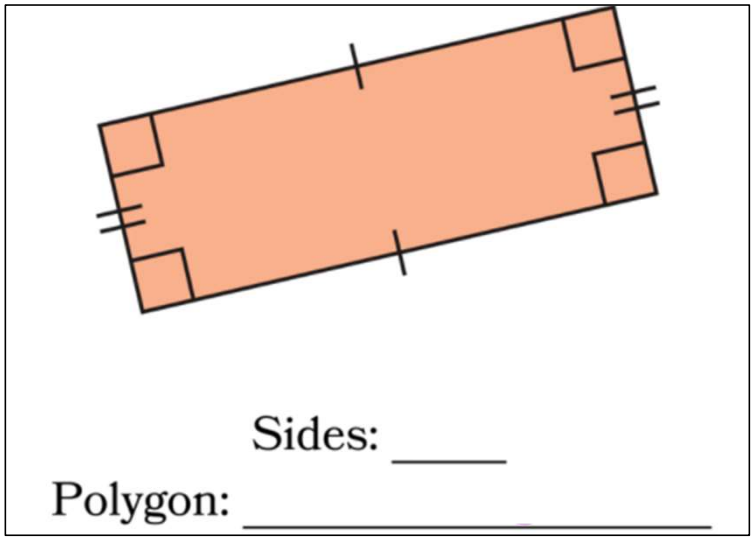


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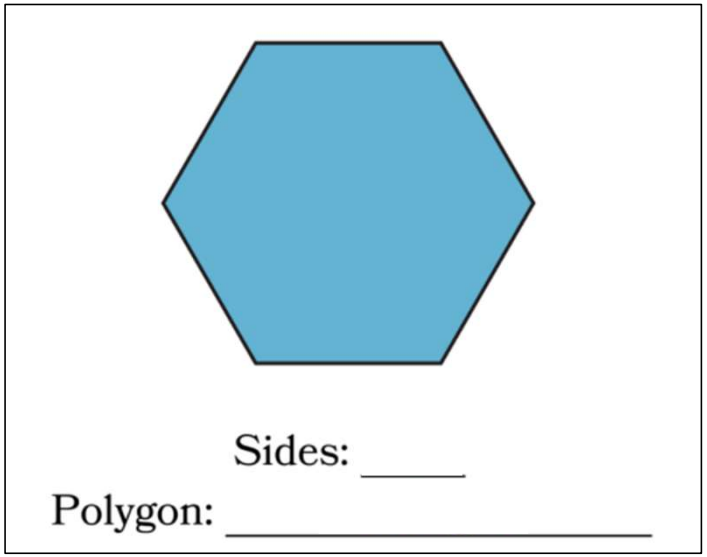


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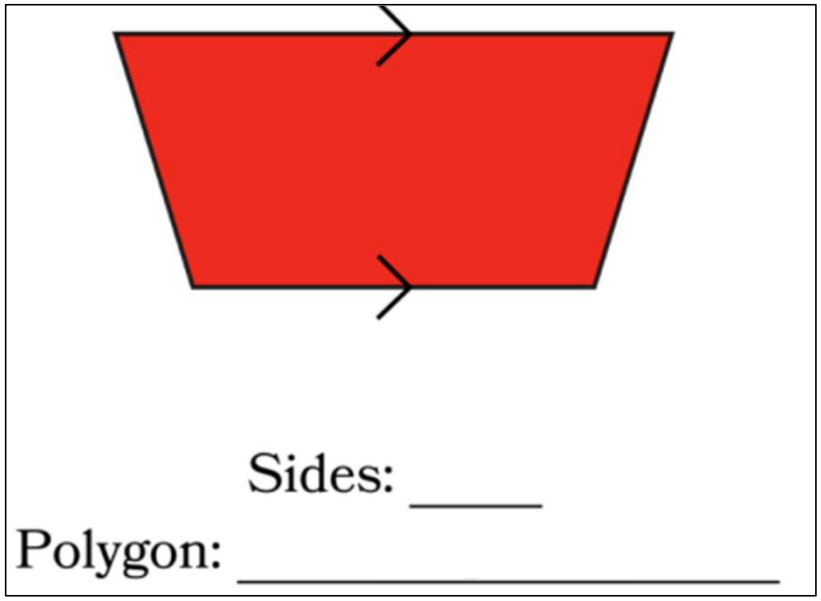


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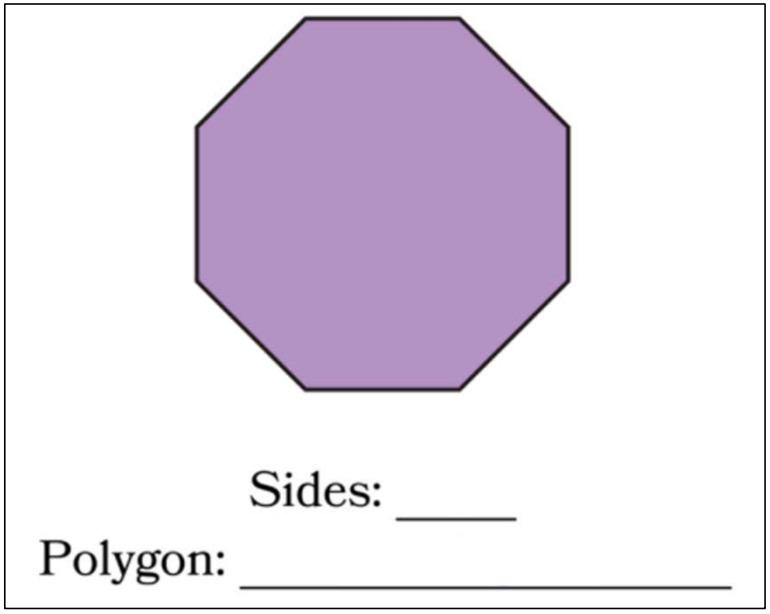


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**FLUENCY (10-min)** **Choral Response: Polygons and Sides**

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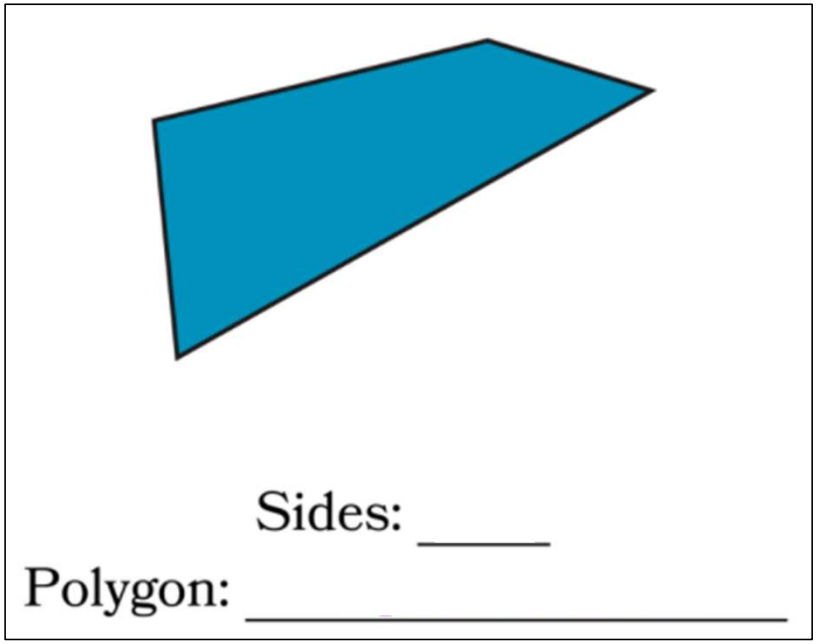


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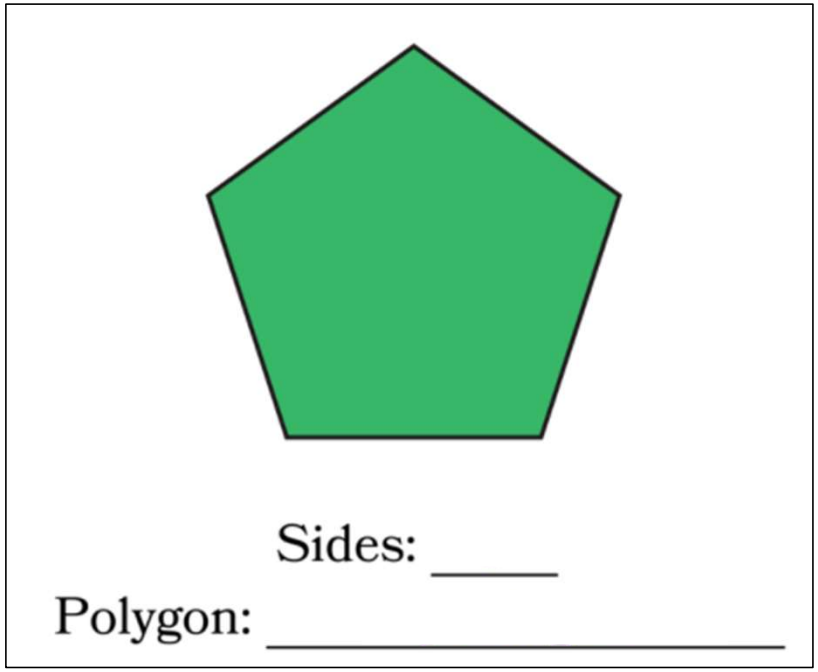


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**FLUENCY (10-min)** **Choral Response: Polygons and Sides**

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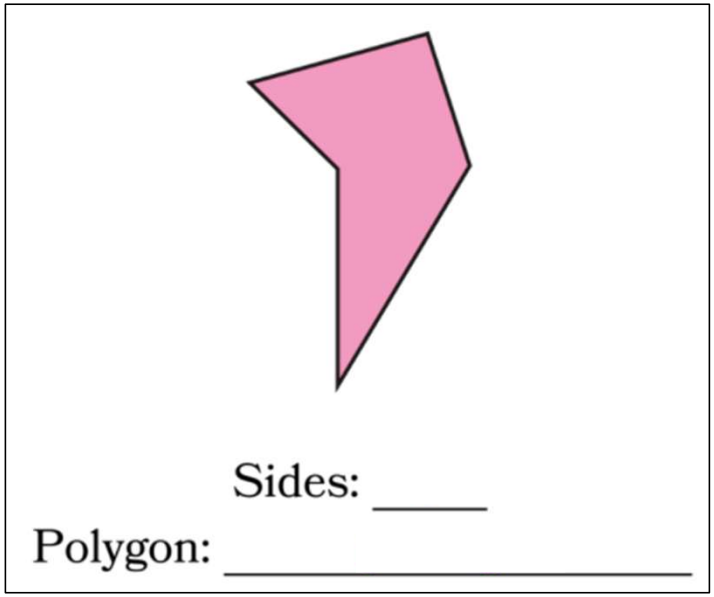


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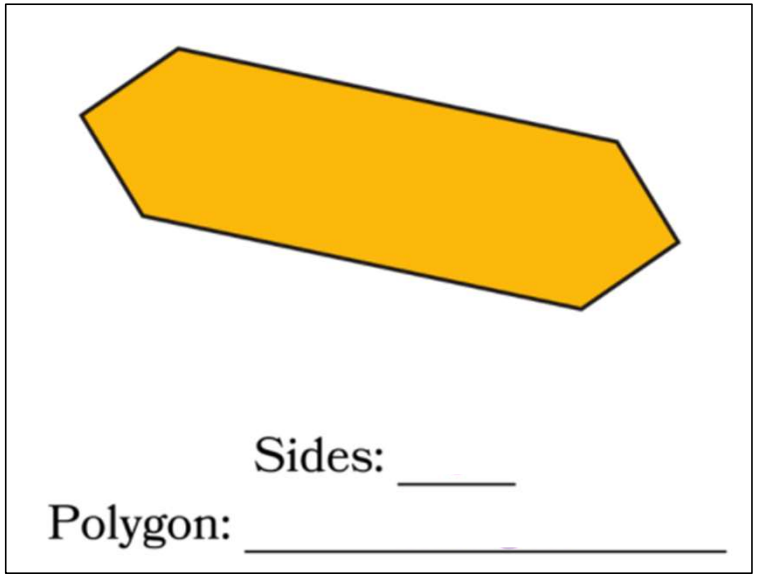



**How many sides?**
**What is the name of the polygon?**

**FLUENCY (10-min)** **Choral Response: Divide Unit Fractions by Whole Numbers**

**What is the quotient?**
**Raise your hand when you know.**

| | | | |
|---|---|---|---|
| $\frac{1}{2} \div 2 =$ _____ | $\frac{1}{2} \div 3 =$ _____ | $\frac{1}{3} \div 2 =$ _____ | $\frac{1}{3} \div 3 =$ _____ |
| $\frac{1}{4} \div 3 =$ _____ | $\frac{1}{5} \div 4 =$ _____ | $\frac{1}{6} \div 6 =$ _____ | $\frac{1}{8} \div 4 =$ _____ |

**FLUENCY (10-min)** **Whiteboard Exchange: Place Value Relationships**

**Raise your hand when you know the answer to each question.**
**Wait for my signal to say the answer.**

What is the **value** of the **green** underline digit?

What is the **value** of the **red** underline digit?

**15.583**

5.

0.5

Write and complete the equations to show the relationship between the values of the underlined digits.

$$\underline{5.} = 10 \times \underline{0.5}$$

$$\underline{0.5} = \frac{1}{10} \times \underline{5.}$$

**FLUENCY (10-min)** **Whiteboard Exchange: Place Value Relationships**

**Raise your hand when you know the answer to each question.**
**Wait for my signal to say the answer.**

What is the **value** of the **green** underline digit?

What is the **value** of the **red** underline digit?

**49.227**

0.2

0.02

Write and complete the equations to show the relationship between the values of the underlined digits.

$$\underline{0.2} = 10 \times \underline{0.02}$$

$$\underline{0.02} = \frac{1}{10} \times \underline{0.2}$$

**FLUENCY (10-min)** **Whiteboard Exchange: Place Value Relationships**

**Raise your hand when you know the answer to each question.**
**Wait for my signal to say the answer.**

What is the **value** of the **green** underline digit?

What is the **value** of the **red** underline digit?

**316.602**

6.

0.6

Write and complete the equations to show the relationship between the values of the underlined digits.

$$\underline{6} = 10 \times \underline{0.6}$$

$$\underline{0.6} = \frac{1}{10} \times \underline{6}$$

**FLUENCY (10-min)** **Whiteboard Exchange: Place Value Relationships**

**Raise your hand when you know the answer to each question.**
**Wait for my signal to say the answer.**

What is the **value** of the **green** underline digit?

What is the **value** of the **red** underline digit?

**850.199**

0.09

0.009

Write and complete the equations to show the relationship between the values of the underlined digits.

$$\underline{0.09} = 10 \times \underline{0.009}$$

$$0.\underline{009} = \frac{1}{10} \times \underline{0.09}$$

**LAUNCH (5-min)** **Solve a real-world problem involving division by 0.1.**

**Word Problem:**

Blake wants to buy a raffle ticket for his class fundraiser.

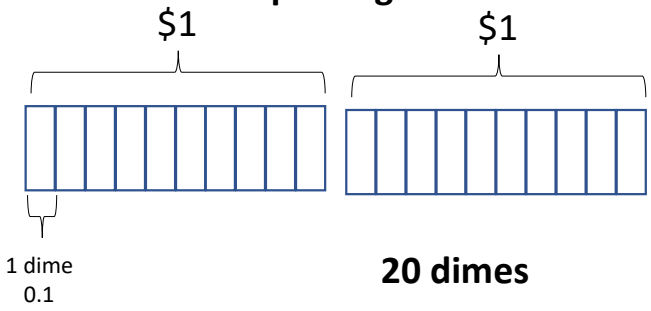
Each raffle ticket costs $\$2$.

Blake reaches into his pocket and discovers that he has only dimes.

How many dimes does Blake need to buy one raffle ticket?


**Working with a partner, use any method you are comfortable with to solve. We will solve this problem using different types of methods.**

**Tape Diagram**




**20 dimes**

**Multiplication Equation**

$2 ➡ 200 cents

1 dime ➡ 10 cents

10 x **20** = 200

**LAUNCH (5-min)** **Solve a real-world problem involving division by 0.1.**

**Word Problem:**

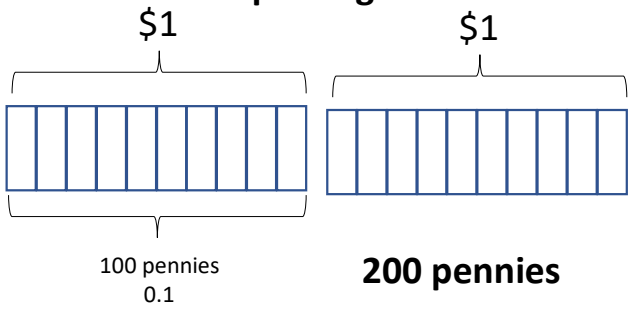
Blake wants to buy a raffle ticket for his class fundraiser.

Each raffle ticket costs $\$2$.

Blake reaches into his pocket and discovers that he has only **PENNIES**

How ma**PENNIES**es Blake need to buy one raffle ticket?

**Tape Diagram**




**Whole-Number Division**

$\$2 \Rightarrow 200$ cents

1 penny $\Rightarrow$ 1 cent

$200 \div 1 = 200$

**LEARN (35-min)** **Divide by 0.1**

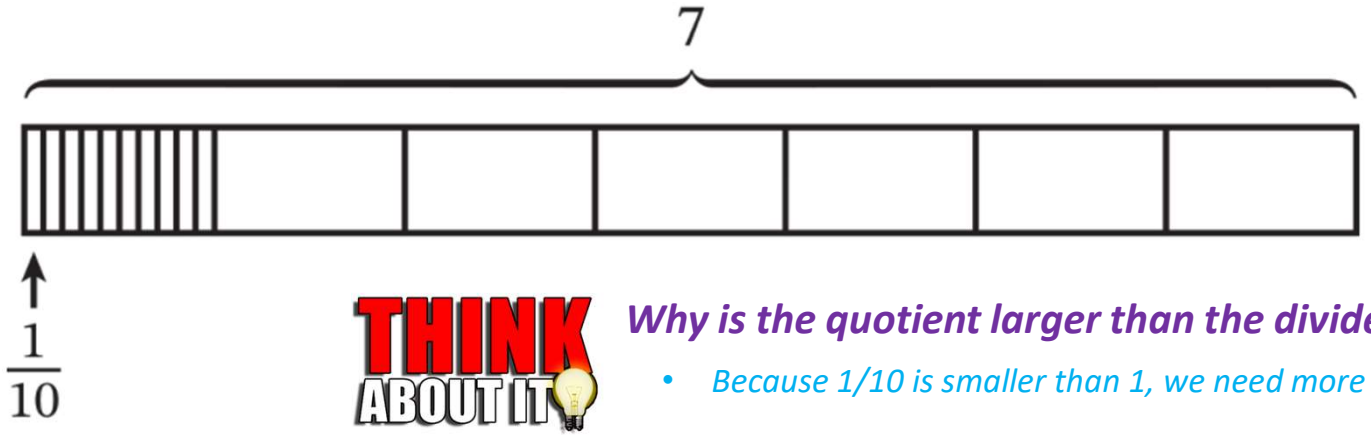
**How can we rewrite this expression by using a fraction for the divisor?**

$$7 \div 0.1$$

$$7 \div \frac{1}{10} = \frac{70}{1} = 70$$

***What question can we ask ourselves to help us find the quotient?***

- *How many tenths make 7?*
- *How many groups of 1/10 make 7?*




**There are 70 groups of 1/10 in 7.**

THINK ABOUT IT

***Why is the quotient larger than the dividend?***

- *Because 1/10 is smaller than 1, we need more groups of 1/10 to make 7.*

**LEARN (35-min)** **Divide by 0.1**

**How can we rewrite this expression by using a fraction for the divisor?**

$$7.4 \div 0.1$$

$$7.4 \div \frac{1}{10} = \frac{74}{1} = 74$$

**There are 74 groups of 1/10 in 7.4**

***How is this problem similar to and different from the previous problem?***

- *We are still dividing by 1/10*
- *There are still 7 ones, but now we also have 4 tenths in the dividend.*
- *We are still asking how many 1/10 make 7.4.*


**7.4**

**70 groups of 1/10 in 7.**

**4 groups of 1/10 in .4**

**LEARN (35-min)** **Divide by 0.01**

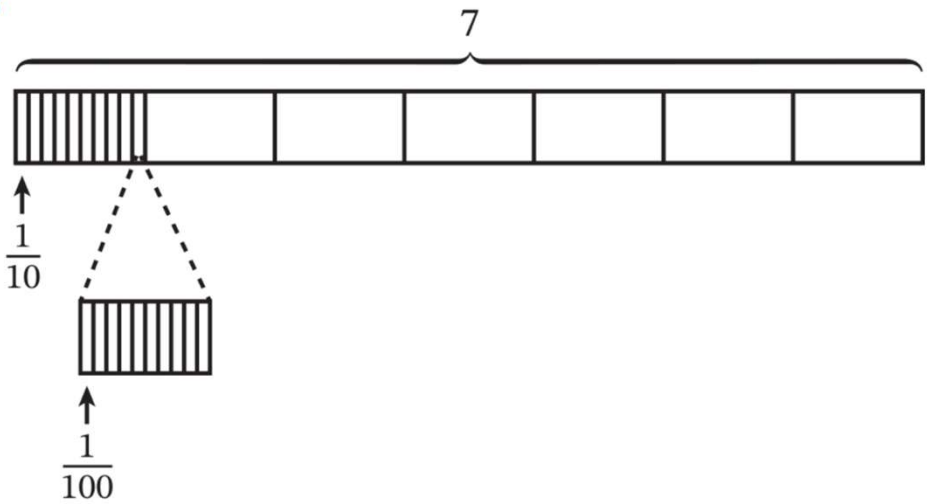
**How can we rewrite this expression by using a fraction for the divisor?**

$$7 \div 0.01$$

$$7 \div \frac{1}{100} = \frac{700}{1} = 700$$

***How is this problem similar to and different from the previous problem?***

- *We still need to find how many groups of a fraction make 7.*
- *The problems are different, because the size of the groups is 1/100 this time.*
- *The quotient will be greater because 1/10 is smaller than 1/10.*




**There are 700 groups of 1/100 in 7.0**

**LEARN (35-min)** **Divide by 0.01**

**How can we rewrite this expression by using a fraction for the divisor?**

$$7.4 \div 0.01$$

$$7.4 \div \frac{1}{100} = \frac{740}{1} = 740$$

**There are 740 groups of 1/100 in 7.4**

***How is this problem similar to and different from the previous problem?***

- *We are still dividing by 1/10*
- *There are still 7 ones, but now we also have 4 tenths in the dividend.*
- *We are still asking how many 1/10 make 7.4.*


**7.4**

**700 groups of 1/100 in 7.**

**40 groups of 1/100 in .40**

**LEARN (35-min)** **Divide by 0.01**

**YOUR TURN:**
**How can we rewrite this expression by using a fraction for the divisor?**

$$7.49 \div 0.01$$

$$7.49 \div \frac{1}{100} = \frac{749}{1} = 749$$

**There are 749 groups of 1/100 in 7.49**


**7.49**

**700 groups of 1/100 in 7.**

**40 groups of 1/100 in .4**

**9 groups of 1/100 in 0.09**

**LEARN (35-min)** **Place Value Patterns in Division**

**MENTAL MATH:**
**Solve these equations by changing the decimal to a fraction.**

**THINK-PAIR-SHARE:**
**What patterns do you notice in the dividends and the quotients when dividing numbers by 0.1?**

- *The quotient is greater than the dividend.*
- *When we divide by 0.1 it is like multiplying by 10.*

$$7 \div 0.1 =$$

$$7.4 \div 0.1 =$$

$$12 \div 0.1 =$$

$$12.6 \div 0.1 =$$

**LEARN (35-min)** **Place Value Patterns in Division**

**MENTAL MATH:**
**Solve these equations by changing the decimal to a fraction.**

$7 \div 0.01 =$

$7.4 \div 0.01 =$

$7.49 \div 0.01 =$

**THINK-PAIR-SHARE:**
**What patterns do you notice in the dividends and the quotients when dividing numbers by 0.01?**

- *The quotient is greater than the dividend.*
- *When we divide by 0.01 it is like multiplying by 100.*

$12 \div 0.01 =$

$12.6 \div 0.01 =$

$12.65 \div 0.01 =$

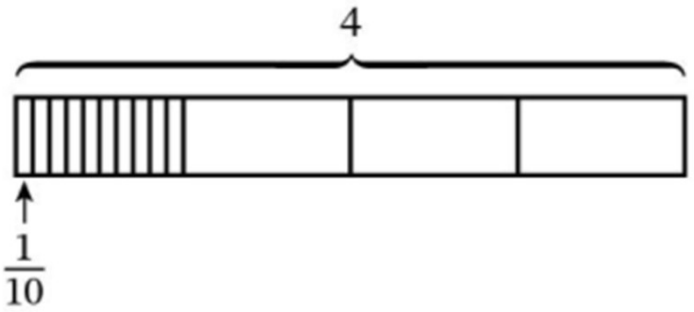
**LEARN (35-min)** **Problem Set**

**LEARN book page 215.**

Use the tape diagrams to complete the statements.

$4 \div 0.01$

1.

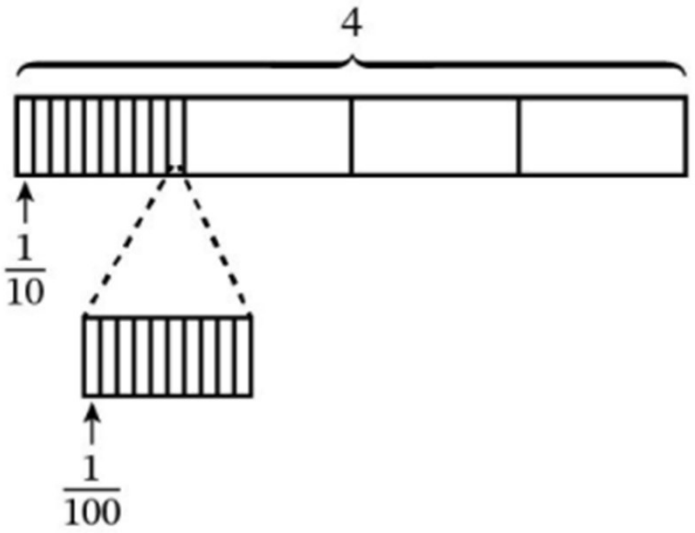



10 groups of $\frac{1}{10}$ make 1.

40 groups of $\frac{1}{10}$ make 4.

$4 \div 0.1$

2.




100 groups of $\frac{1}{100}$ make 1.

400 groups of $\frac{1}{100}$ make 4.

**LAND (10-min)** **Exit Ticket**


Exit Ticket – PAGE 219

**Small Group Time:**
Problem Set Pages 216 -218

**Homework:**
Page 145 APPLY BOOK

Name _____ Date _____

23

For problems 1 and 2, rewrite the expression as a decimal number divided by a fraction. Then divide.

1. $6.8 \div 0.1 =$ _____

2. $4.17 \div 0.01 =$ _____

3. Julie has 4.4 kilograms of cheese. She divides the cheese into equal-size portions of 0.1 kilogram each. How many portions of cheese does Julie have?