

Module 4 - Lesson 20:

Divide decimal numbers to hundredths by one-digit whole numbers and multiples of 10, 100, or 1,000 by using unit form and place value understanding.

CCSS Standard – 5.NBT.B.7

FLUENCY (10-min)

Whiteboard Exchange: Divide in Unit and Standard Form



What is 6 ones \div 2 in unit form?

$$6 \text{ ones} \div 2 = \underline{\quad\quad} \text{ ones}$$

Write the equation with numbers in standard form.

What is 27 ones \div 3 in unit form?

$$27 \text{ ones} \div 3 = \underline{\quad\quad} \text{ ones}$$

Write the equation with numbers in standard form.

What is 8 tens \div 4 in unit form?

$$8 \text{ tens} \div 4 = \underline{\quad\quad} \text{ tens}$$

Write the equation with numbers in standard form.

What is 35 tens \div 5 in unit form?

$$35 \text{ tens} \div 5 = \underline{\quad\quad} \text{ tens}$$

Write the equation with numbers in standard form.

FLUENCY (10-min)

Whiteboard Exchange: Divide in Unit and Standard Form



What is 24 hundreds \div 6 in unit form?

24 hundreds \div 6 = _____ hundreds

Write the equation with numbers in standard form.

What is 56 hundreds \div 7 in unit form?

56 hundreds \div 7 = _____ hundreds

Write the equation with numbers in standard form.

FLUENCY (10-min)

Counting on the Number Line by 5 Tenths

Use the number line to count by 5 tenths in fraction form from $0/10$ to $50/10$.
The first number you say is $0/10$. Ready?



Now, count forward by 5 tenths again. This time rename the fractions as whole numbers or mixed numbers when possible.

Now, count forward by 5 tenths again. This time say the numbers in standard form.

FLUENCY (10-min)

Whiteboard Exchange: Divide by Powers of 10.



Write and complete the equation.

$$2 \div 10 = \underline{\hspace{2cm}}$$
$$\frac{2}{10}$$

$$5 \div 100 = \underline{\hspace{2cm}}$$
$$\frac{5}{100}$$

$$8 \div 1,000 = \underline{\hspace{2cm}}$$
$$\frac{8}{1,000}$$

$$0.4 \div 10 = \underline{\hspace{2cm}}$$
$$\frac{4}{10} \div 10$$

$$0.7 \div 100 = \underline{\hspace{2cm}}$$
$$\frac{7}{10} \div 100$$

$$17 \div 1,000 = \underline{\hspace{2cm}}$$
$$\frac{17}{1,000}$$

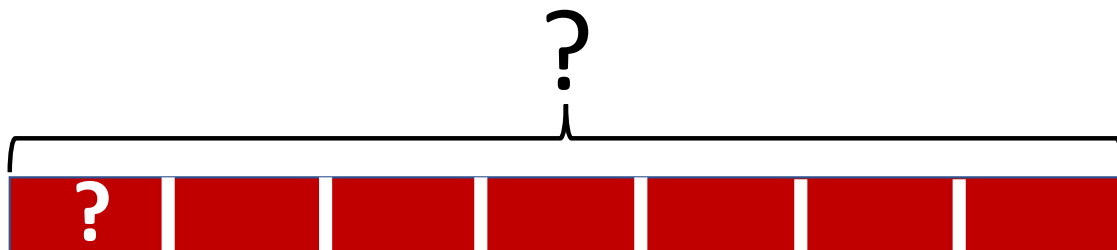
LAUNCH (10-min)

Determine the relationship between the dividend, divisor, and quotient in a division word problem.

Lacy has a piece of ribbon.

She cuts the ribbon into smaller, equal-size pieces.

What is the length of each smaller piece of ribbon?



We need to know the length of the ribbon and how many equal parts Lacy cut the ribbon into!

THINK-PAIR-SHARE:

What can we draw to represent this problem?

Do we have all the information we need to solve the problem?

LAUNCH (10-min)

Determine the relationship between the dividend, divisor, and quotient in a division word problem.

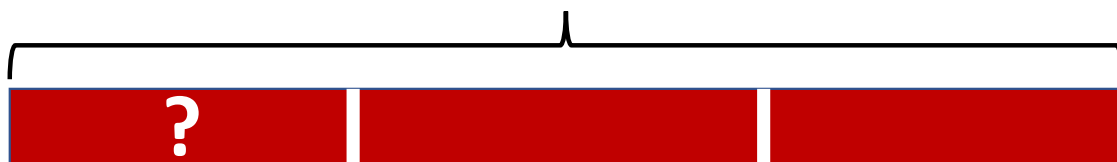
Lacy has a piece of ribbon that is 6 meters long.
She cuts the ribbon into 3 equal-size pieces.
What is the length of each smaller piece of ribbon?

MORE INFORMATION

What do we know now that we did not know before?

We now know the LENGTH of the ribbon and how many 3 equal sizes it is cut into.

6 meters



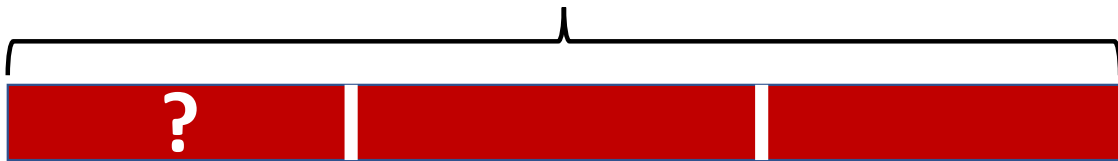
$$6 \div 3 = 2 \text{ m}$$

LAUNCH (10-min)

Determine the relationship between the dividend, divisor, and quotient in a division word problem.

Lacy has a piece of ribbon that is 0.9 meters long.
She cuts the ribbon into 3 equal-size pieces.
What is the length of each smaller piece of ribbon?

0.9 meters



WHAT IF.....

What is the same and different about the problem now?

The ribbon is still cut into 3 smaller, equal-sized pieces.

Now, the ribbon is 0.9 meters long.

$$\frac{9}{10} \div 3 = \frac{3}{10}$$

or

0.3

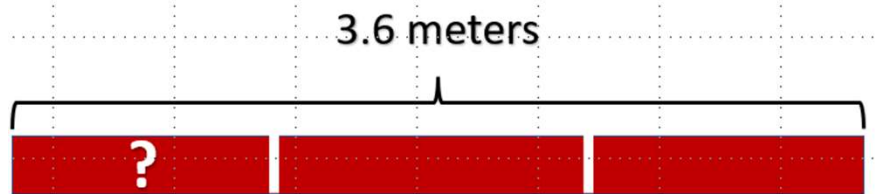
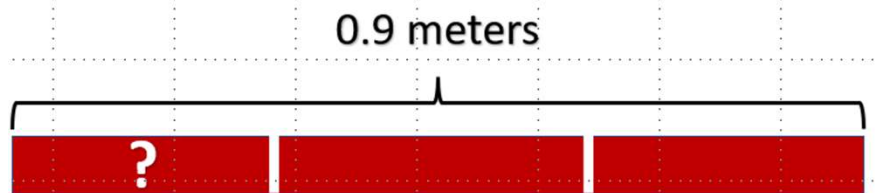
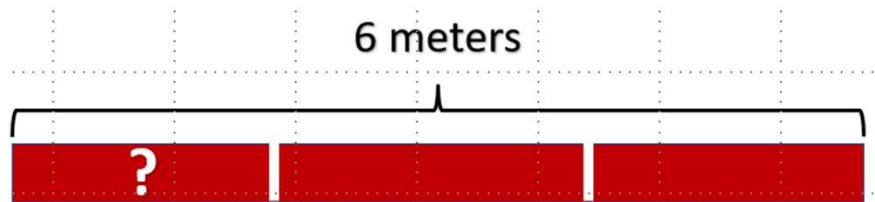
Suppose the ribbon was 3.6 meter long? Or 0.36 meters long?
How would that information change the drawing?

LAUNCH (10-min)

Determine the relationship between the dividend, divisor, and quotient in a division word problem.

Only the dividend changes. Everything else stays the same.

Take-away: We can use the same models to show how to divide decimals into equal-sized groups as we do whole numbers.



$$3 \overline{) 6}$$

$$3 \overline{) 0.9}$$

$$3 \overline{) 3.6}$$

LEARN (30-min)

Divide Decimal Numbers by One-Digit Whole Numbers by Using Unit Form.

Lacy has a piece of ribbon that is 0.9 meters long.
She cuts the ribbon into 3 equal-size pieces.
What is the length of each smaller piece of ribbon?

What expression can be used to represent the problem?

$$0.9 \div 3 = 0.3$$

Let's write the decimal number in UNIT FORM:

$$9 \text{ tenths} \div 3 = 3 \text{ tenths}$$

Lacy has a piece of ribbon that is 0.36 meters long.
She cuts the ribbon into 3 equal-size pieces.
What is the length of each smaller piece of ribbon?

What expression can be used to represent the problem?

$$0.36 \div 3 = 0.12$$

Let's write the decimal number in UNIT FORM:

$$36 \text{ hundredths} \div 3 = 12 \text{ hundredths}$$

Lacy has a piece of ribbon that is 3.6 meters long.
She cuts the ribbon into 3 equal-size pieces.
What is the length of each smaller piece of ribbon?

What expression can be used to represent the problem?

$$3.6 \div 3 = 1.2$$

Let's write the decimal number in UNIT FORM:

$$36 \text{ tenths} \div 3 = 12 \text{ tenths}$$

What do you notice about $36 \text{ hundredths} \div 3$ and $36 \text{ tenths} \div 3$?

LEARN (30-min)**Divide Decimal Numbers by One-Digit Whole Numbers by Using Unit Form.**

How is thinking about unit form to divide decimal numbers by whole numbers similar to and different from thinking about unit form to divide whole numbers?

$$0.36 \div 3 = 0.12$$

$$36 \text{ hundredths} \div 3 = 12 \text{ hundredths}$$

$$3.6 \div 3 = 1.2$$

$$36 \text{ tenths} \div 3 = 12 \text{ tenths}$$

$$36. \div 3 = 12$$

$$36 \text{ ones} \div 3 = 12 \text{ ones}$$

$$3600. \div 3 = 1,200$$

$$36 \text{ hundreds} \div 3 = 12 \text{ hundred}$$

$$36,000,000. \div 3 = 12,000,000$$

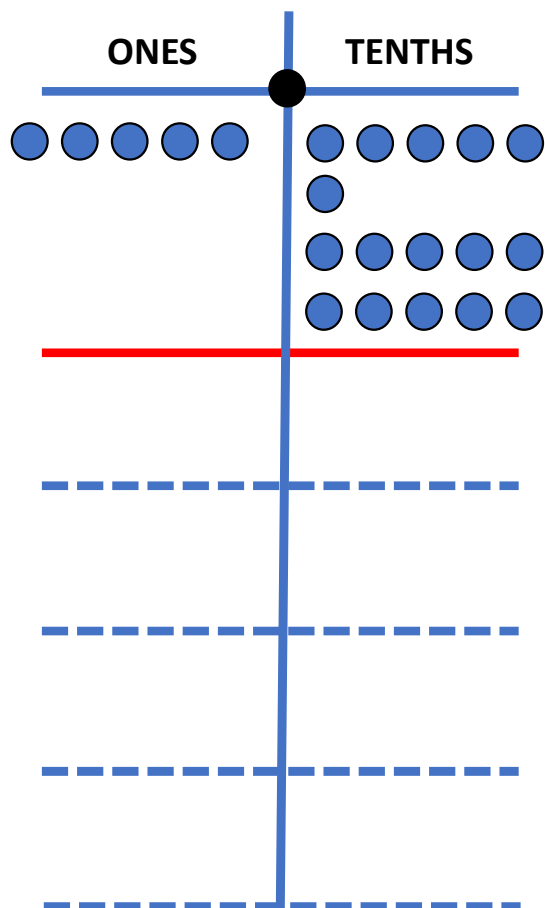
$$36 \text{ millions} \div 3 = 12 \text{ million}$$

We can think about the dividend in unit form when dividing decimal numbers by whole numbers and when dividing whole numbers. With decimal numbers the unit is a decimal unit, but with whole numbers the unit is a whole-number unit.

LEARN (30-min)

**Divide Decimal Numbers by One-Digit Whole Numbers by
Drawing on a Place Value Chart.**

THINK-PAIR-SHARE: Estimate the quotient.



$$5.6 \div 4$$

$$5.6 \approx 6$$

$$6/4 = 1 \frac{2}{4} \text{ or } 1 \frac{1}{2}$$

Let's draw on a place value chart to divide 5.6 by 4.

What is the divisor? **4**

What unit do we distribute first? **ones**

Can we distribute the last one? Why? **No. The groups need to be equal. We have to RENAME the 1 one as 10 tenths.**

How many tenths are on our place value drawing now? **16**

How many ones and tenths are in EACH group? **1 one 4 tenths**

$$5.6 \div 4 = 1.4$$

LEARN (30-min)

Divide Decimal Numbers by One-Digit Whole Numbers by Drawing on a Place Value Chart.

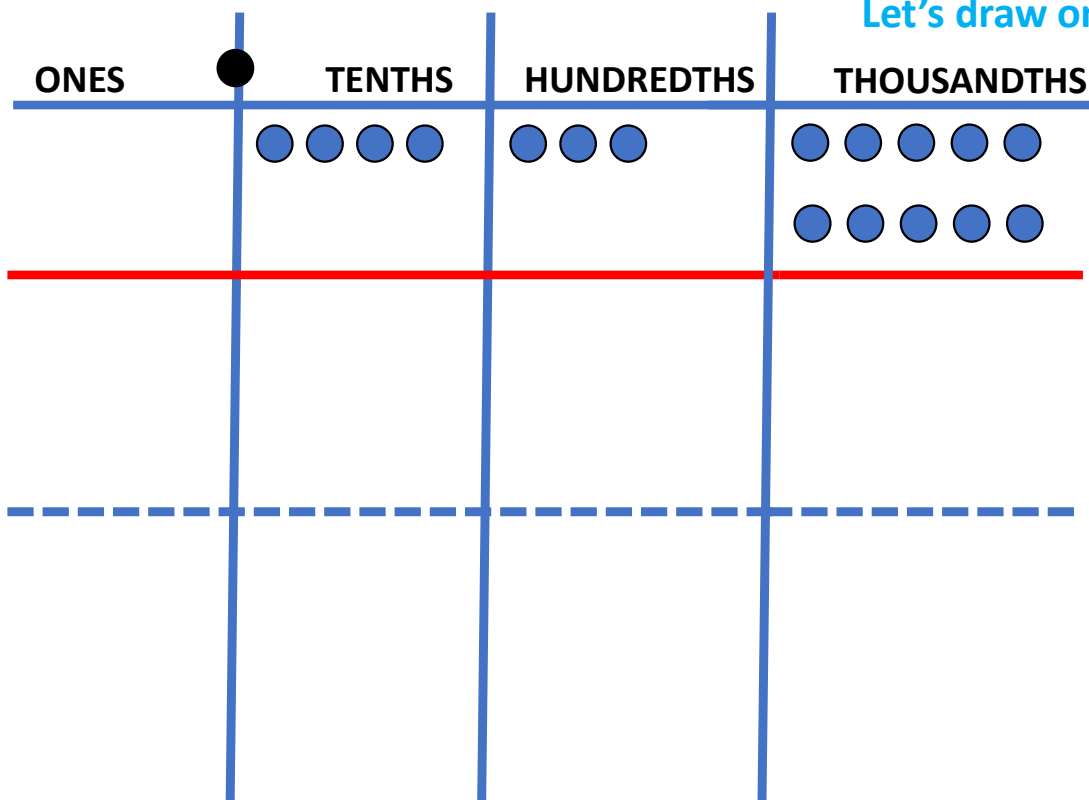
THINK-PAIR-SHARE: Estimate the quotient.

$$0.43 \div 2$$

$$0.43 \approx 0.4$$

$$0.4 \div 2 = 0.2 \text{ or } 2 \text{ tenths}$$

Let's draw on a place value chart to divide 0.43 by 2.



It seems that 1 hundredth is our remainder, but how can we rename 1 hundredth?

We can rename the 1 hundredth as 10 thousandths

How many tenths, hundredths and thousandths are in EACH group?

2 tenths 1 hundredth 5 thousandths

$$0.43 \div 2 = 0.215$$

LEARN (30-min)

Divide Decimal Numbers by Multiples of 10, 100, or 1,000

THINK-PAIR-SHARE: Estimate the quotient.

$$2.5 \div 50$$

$$\begin{aligned} 2.5 \div 50 &= 2.5 \div 5 \div 10 \\ &= 0.5 \div 10 \\ &= 0.05 \end{aligned}$$

$$25 \text{ tenths} \div 5 = 5 \text{ tenths}$$

Why do you think the student rewrote the expression as $2.5 \div 5 \div 10$?

Both expressions will have the same value, but dividing by 5 and then by 10 can be done mentally.

LEARN book page 187.

Divide. Express the quotient in unit form and standard form.

$$\begin{array}{l} 1. \quad 6 \text{ tenths} \div 3 = \underline{2} \text{ tenths} \\ \quad \quad 0.6 \div 3 = \underline{0.2} \end{array}$$

$$\begin{array}{l} 2. \quad 8 \text{ hundredths} \div 4 = \underline{2} \text{ hundredths} \\ \quad \quad 0.08 \div 4 = \underline{0.02} \end{array}$$

$$\begin{array}{l} 3. \quad 14 \text{ tenths} \div 2 = \underline{7} \text{ tenths} \\ \quad \quad \underline{1.4} \div 2 = \underline{0.7} \end{array}$$

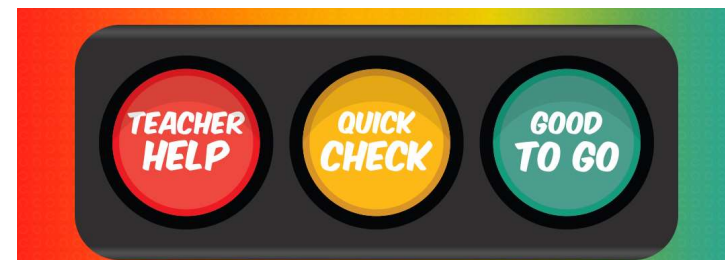
$$\begin{array}{l} 4. \quad 24 \text{ hundredths} \div 6 = \underline{4} \text{ hundredths} \\ \quad \quad \underline{0.24} \div 6 = \underline{0.04} \end{array}$$

$$\begin{array}{l} 5. \quad 515 \text{ tenths} \div 5 = \underline{103} \text{ tenths} \\ \quad \quad \underline{51.5} \div 5 = \underline{10.3} \end{array}$$

$$\begin{array}{l} 6. \quad 840 \text{ hundredths} \div 8 = \underline{105} \text{ hundredths} \\ \quad \quad \underline{8.40} \div 8 = \underline{1.05} \end{array}$$

LAND (10-min)

Exit Ticket



Name

Date

 **20**

Divide. Show your work.

1. $0.42 \div 7 =$ _____

2. $5.2 \div 200 =$ _____

Exit Ticket – PAGE 191

Small Group Time:

Problem Set Pages 187 -190

Homework:

Page 127 APPLY BOOK