Module 4 - Lesson 21:

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

CCSS Standard – 5.NBT.B.7

FLUENCY (10-min) **Counting on the Number Line by 6 Tenths**

Use the number line to count by 6 tenths in fraction form from 0/10 to 60/10.
The first number you say is 0/10. Ready?

Now, count forward by 6 tenths again. This time rename the fractions as whole numbers or mixed numbers when possible.

Now, count forward by 6 tenths again. This time say the numbers in standard form.

FLUENCY (10-min) **Whiteboard Exchange: Divide in Unit and Standard Form**

What is 9 tenths ÷ 3 in unit form?

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

Write the equation with the numbers in standard form.

What is 24 tenths ÷ 6 in unit form.

$24 \text{ tenths} \div 4 = \_\_\_\_ \text{tenths}$

Write the equation with the numbers in standard form.

What is 45 tenths ÷ 5 in unit form.

$45 \text{ tenths} \div 5 = \_\_\_\_ \text{tenths}$

Write the equation with the numbers in standard form.

What is 18 hundredths ÷ 6 in unit form.

$18 \text{ hundredths} \div 6 = \_\_\_\_ \text{hundredths}$

Write the equation with the numbers in standard form.

FLUENCY (10-min) **Whiteboard Exchange: Divide in Unit and Standard Form**

What is 49 hundredths ÷ 7 in unit form.

$$49 \text{ hundredths} \div 7 = \_\_\_\_ \text{ hundredths}$$

Write the equation with the numbers in standard form.

What is 72 hundredths ÷ 8 in unit form.

$$72 \text{ hundredths} \div 8 = \_\_\_\_ \text{ hundredths}$$

Write the equation with the numbers in standard form.

FLUENCY (10-min) **Whiteboard Exchange: Divide by Powers of 10**

Write and complete the equation.

$3 \div 10 = \_\_\_\_\_$	$6 \div 100 = \_\_\_\_\_$	$9 \div 1{,}000 = \_\_\_\_\_$
$\frac{3}{10}$	$\frac{6}{100}$	$\frac{9}{1{,}000}$
$1.5 \div 10 = \_\_\_\_\_$	$4.8 \div 100 = \_\_\_\_\_$	$148 \div 1{,}000 = \_\_\_\_\_$
$\frac{15}{100}$	$\frac{48}{100}$	$\frac{148}{1{,}000}$

LAUNCH (5-min) **Rename decimal numbers to divide in unit form.**

How did the student find 178 ÷ 4?

*The student rewrote the expression in unit form and used **long division**.*

$$17.4 \div 4 = 174 \text{ tenths} \div 4 = 43\frac{2}{4} \text{ tenths}$$

			3
		4	0
4	1	7	4
−	1	6	0
		1	4
−		1	2
			2

tenths

How did the student write the remainder of 2?

The student rewrote the remainder as a fraction, 2/4.

Does using a fraction as a remainder make sense?

No. For division problems with a decimal quotient, writing the remainder as a fraction may be confusing.

Today, we will use a place value chart to help us divide a decimal number by a whole number and record our work in vertical form.

LEARN (35-min) **Record Long Division of a Decimal Number in Vertical Form**

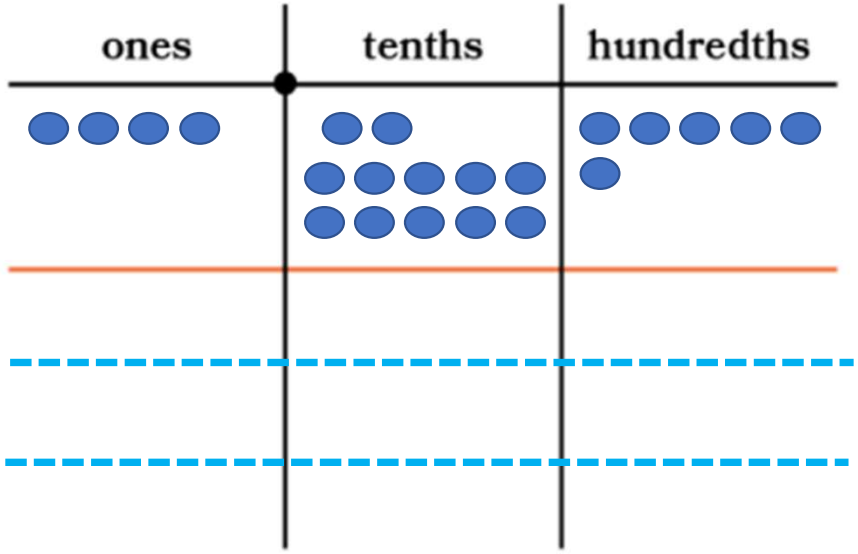
LEARN book page 133.

4.26 ÷ 3 ≈ 4 ÷ 2 = 2 ≈ 4 ÷ 4 = 1

TURN & TALK: Estimate the quotient first.

Use the place value chart to divide. Then record your work in vertical form.

1. 4.26 ÷ 3 = _____



Based on our estimate and based on the place value chart, where should the decimal be placed in the quotient?

Is **1.42** reasonable?

$$
\begin{array}{r}
1.42 \\
3\overline{)\,4.26} \\
-\,3 \\
\hline
12 \\
-\,12 \\
\hline
06 \\
-\,6 \\
\hline
\end{array}
$$

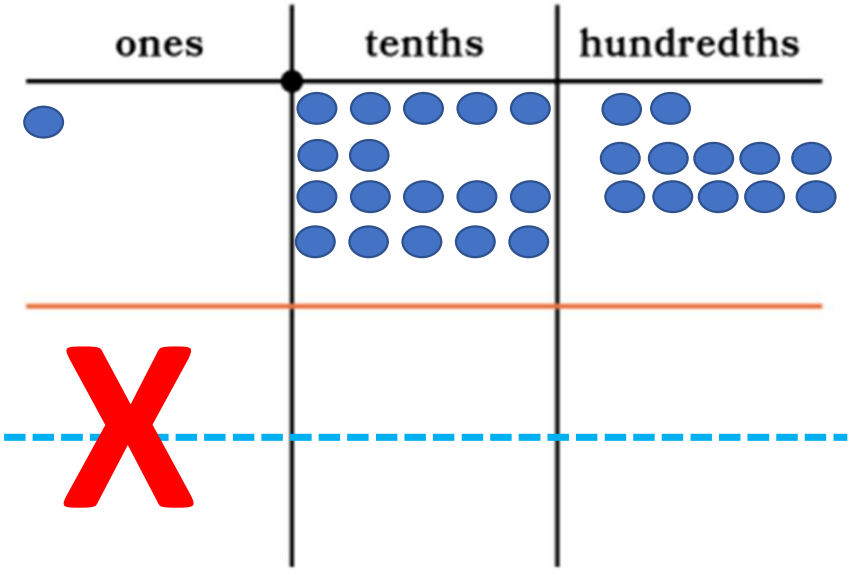
LEARN (35-min) **Record Long Division of a Decimal Number in Vertical Form**

LEARN book page 133.

TURN & TALK: Estimate the quotient first.

1.72 ÷ 2 ≈ 2 ÷ 2 = 1

2. 1.72 ÷ 2 = _____



$$\begin{array}{r} 0.86 \\ 2\overline{)\,1.72} \\ -\,16\downarrow \\ \hline 12 \\ -\,12 \\ \hline 0 \end{array}$$

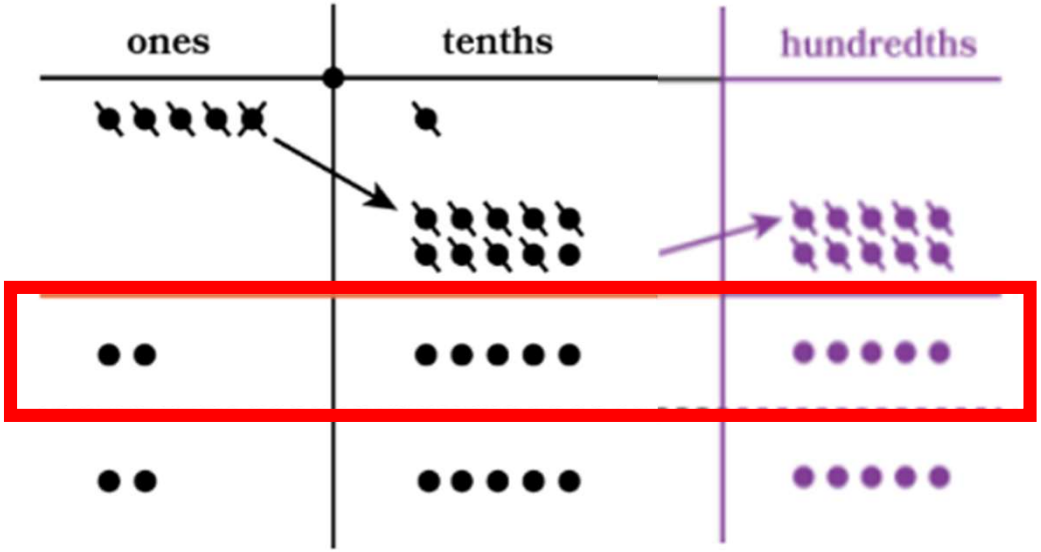
Based on our estimate and based on the place value chart, where should the decimal be placed in the quotient?

Is **0.86** reasonable?

LEARN (35-min) **Record Renaming a New Unit to Divide in Vertical Form**

LEARN book page 194.
The work is correct so far, but it is not finished. There is still 1 tenth to distribute.

3. $5.1 \div 2 =$ _____



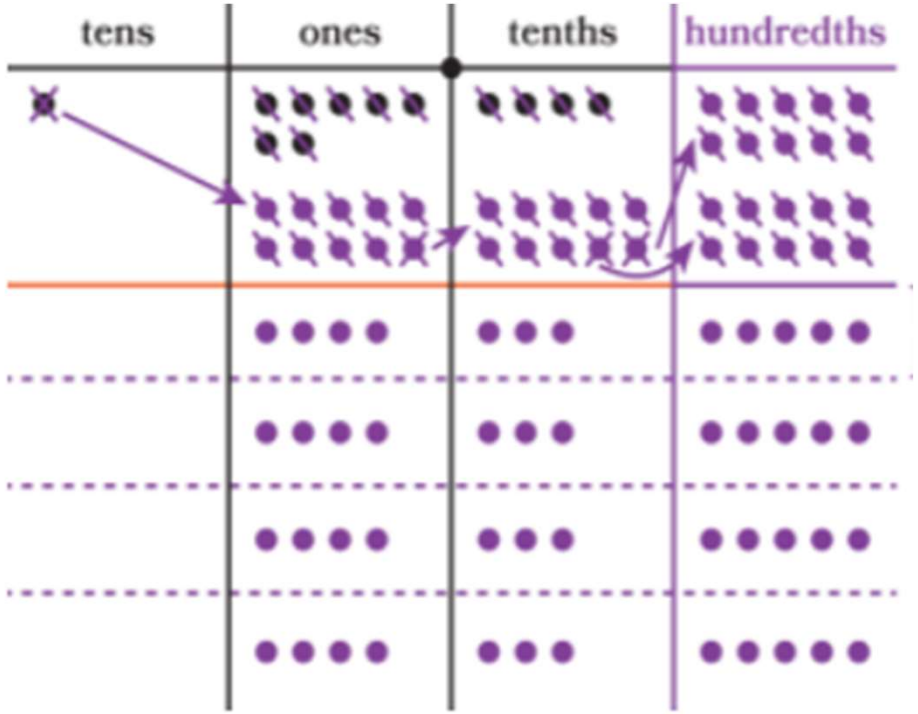
This is where the place value chart stopped.
We still have 1 tenth to distribute.

$$
\begin{array}{r}
2.55 \\
2\overline{)\,5.10} \\
-\,4 \\
\hline
\,11 \\
-\,10 \\
\hline
\,10 \\
-\,10 \\
\hline
\,0
\end{array}
$$

LEARN (35-min) **Record Renaming a New Unit to Divide in Vertical Form**

LEARN book page 194.
Let's use vertical form to complete this problem.

4. $17.4 \div 4 =$ _____



$$
\begin{array}{r}
0.4.3\,5 \\
4\overline{)\,17.40} \\
-\,16 \\
\hline
1\,4 \\
-\,1\,2 \\
\hline
2\,0 \\
-\,2\,0 \\
\hline
0
\end{array}
$$

LEARN (35-min) **Divide by a Multiple of 10, 100, or 1,000 by Using Vertical Form.**

LEARN book page 195.

Divide. Show your work.

5. $524.6 \div 50 =$ _____

How can we write a related expression for 524.6 ÷ 50 so that we can use a method we have for dividing a decimal number by a one-digit number?

$$(524.6 \div 10) \div 5$$

$$52.46 \div 5$$

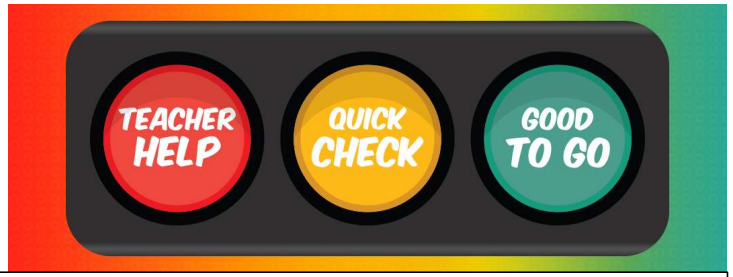
$$\approx 50 \div 5 = \mathbf{10}$$

Is **10.592** reasonable?

$$\begin{array}{r} 10.592 \\ 5\overline{)52.460} \\ -\ 5\downarrow\ \downarrow\ \downarrow\ \downarrow \\ \hline 02\ 4\ \downarrow\ \downarrow \\ -\ 2\ 0\ \downarrow \\ \hline 46\ \downarrow \\ -\ 45 \\ \hline 10 \\ -10 \\ \hline 0 \end{array}$$

LAND (10-min)

Exit Ticket



Name _____ Date _____

21

Divide. Show your work.

$0.81 \div 6 =$ _____

Exit Ticket – PAGE 203

Small Group Time:
Problem Set Page 197 - 201

Homework:
Page 133 APPLY BOOK