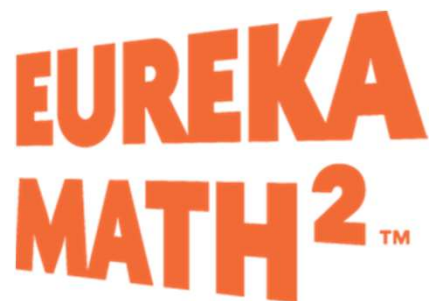




Module 4 - Lesson 15:

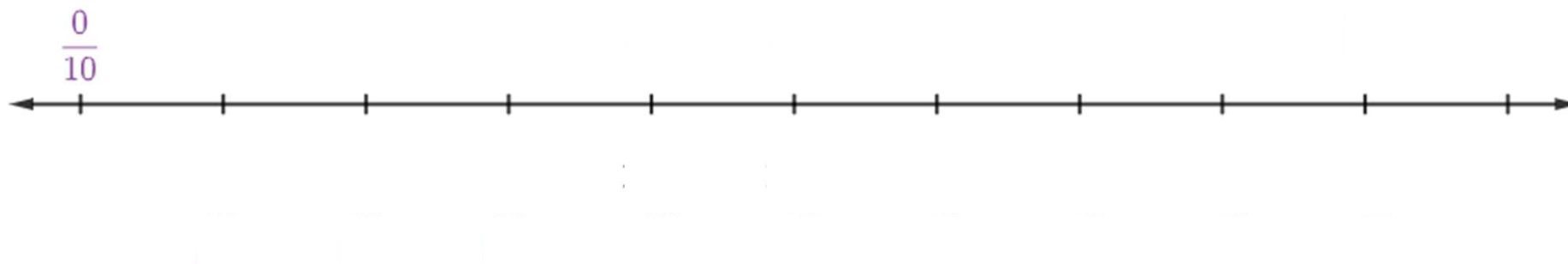
Multiply decimal numbers to hundredths by one-digit whole numbers and multiples of 10, 100, or 1,000 by using different written methods.

CCSS Standard – 5.NBT.B.7

FLUENCY (10-min)**Counting on the Number Line by 3 Tenths**

Use the number line to count by 3 tenths in fraction form from $0/10$ to $30/10$.

The first number you say is $0/10$. Ready?



Now count by 3 tenths again. This time **RENAME** the fractions as whole numbers or mixed numbers when possible. The first number you say is 0. Ready?

Now count by 3 tenths again. This time say the number in decimal form. The first number you say is 0. Ready?

FLUENCY (10-min)

Whiteboard Exchange: Standard and Unit Form



Write the unit form into
STANDARD FORM.

14 tenths = _____

67 tenths = _____

258 tenths = _____

1,259 tenths = _____

Hundreds	Tens	Ones	Tenths	Hundredths	Thousandths

Write the standard form into
UNIT FORM in TENTHS.

3.8 = _____

9.1 = _____

10.6 = _____

103.5 = _____

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

Write the equation and find the product.

$$0.3 \times 10 = \underline{\hspace{2cm}}$$

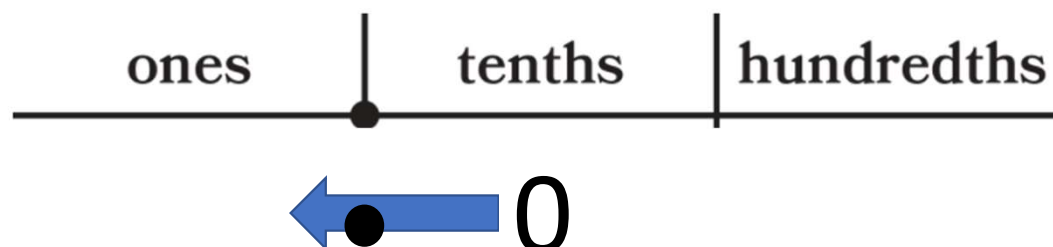
$$0.6 \times 100 = \underline{\hspace{2cm}}$$

$$0.8 \times 1,000 = \underline{\hspace{2cm}}$$

$$1.05 \times 10 = \underline{\hspace{2cm}}$$

$$4.072 \times 100 = \underline{\hspace{2cm}}$$

$$7.539 \times 1,000 = \underline{\hspace{2cm}}$$



LAUNCH (5-min)

Reason the placement of the decimal point in a product

Look at the expression given.

$$3 \times 5.14$$

Discuss your thinking with a partner, determine which product is most reasonable.

Solve the problem using any method.

A) 1,542

B) 154.2

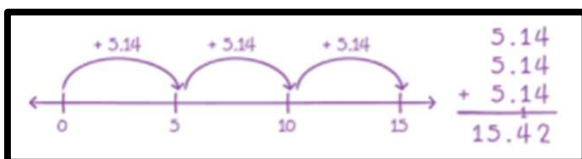
C) 15.42

D) 1.542

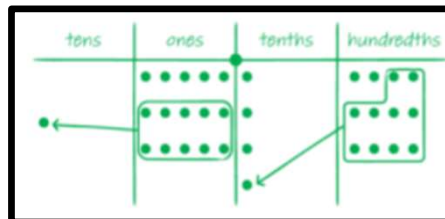
Estimating first would have helped with this problem.

5.14 is about 5. So, $3 \times 5 = 15$. Only choice C gives an answer that is reasonable.

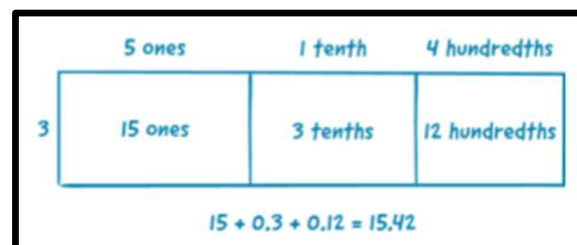
Number Line Method



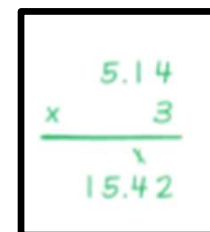
Place Value Chart



Area Model



Vertical Form



LEARN (35-min)

Multiply by Using Unit Form

THINK-PAIR-SHARE:

How might we estimate here to find the product?

0.9 rounds to 1 and $4 \times 1 = 4$.

The product would be a little less than 4.

What if we read the problem in unit form? What is 4×9 tenths?

$$4 \times 0.9$$

$$\begin{aligned} 4 \times 9 \text{ tenths} \\ = 36 \text{ tenths} \\ = 3.6 \end{aligned}$$

LEARN (35-min)

Multiply by Using Unit Form

Let's repeat the process for this problem:

2.13 rounds to 2 and $3 \times 2 = 6$.

The product would be a little more than 6.

What if we read the problem in unit form?

What is 3×213 hundredths?

$$3 \times 2.13$$

$$\begin{aligned} &3 \times 213 \text{ hundredths} \\ &= 639 \text{ hundredths} \\ &= 6.39 \end{aligned}$$

LEARN (35-min)

Multiply by Using Unit Form

Notice how using unit form to multiply a decimal number is similar to using unit form to multiply two whole numbers.

In both problems, we must multiply 213×3 .

This thinking sets us up to use the vertical form method.

$$\begin{aligned} 3 \times 2,130 &= 3 \times 213 \text{ tens} \\ &= 639 \text{ tens} \\ &= 6,390 \end{aligned}$$

$$\begin{aligned} 3 \times 2.13 &= 3 \times 213 \text{ hundredths} \\ &= 639 \text{ hundredths} \\ &= 6.39 \end{aligned}$$

LEARN (35-min)

Multiply by Using Unit and Vertical Form

First, estimate the product.

4.3 rounds to 4 and $5 \times 4 = 20$.

The product would be a little more than 20.

Unit Form

$$\begin{aligned} 5 \times 43 \text{ tenths} \\ = 215 \text{ tenths} \\ = 21.5 \end{aligned}$$

$$5 \times 4.3$$

Vertical Form

$$\begin{array}{r} 14.3 \\ \times \quad 5 \\ \hline 21.5 \end{array}$$

LEARN (35-min)

Multiply by Multiples of 10, 100, or 1,000

First, estimate the product.

5.46 rounds to 5 and $5 \times 30 = 150$.

The product would be more than 150.

Or

5.46 rounds to 6 and $6 \times 30 = 180$.

The product would be less than 180.

$$5.46 \times 30$$

We can rewrite the expression to make this problem similar to the problems we already did.

$$5.46 \times 10 \times 3$$

$$54.6 \times 3$$

$$\begin{array}{r} 1 1 \\ 54.6 \\ \times 3 \\ \hline 163.8 \end{array}$$

LEARN (35-min)**Multiply by Multiples of 10, 100, or 1,000**

First, estimate the product.

*5.46 rounds to 5 and $5 \times 300 = 1,500$.
The product would be more than 1,500.*

Or

*5.46 rounds to 6 and $6 \times 300 = 1,800$.
The product would be less than 1,800.*

$$5.46 \times 300$$

$$5.46 \times 100 \times 3$$

$$546. \times 3$$

$$\begin{array}{r} 11 \\ 546. \\ \times 3 \\ \hline 1,638. \end{array}$$

LEARN (35-min)**Distributive Property vs. Associative Property****Distributive Property**

$$\begin{aligned}465 \times 8 &= 400 \times 8 + 60 \times 8 + 5 \times 8 \\&= 3,200 + 480 + 40 \\&= 3,720\end{aligned}$$

$$\begin{aligned}2.31 \times 7 &= 2 \times 7 + 0.3 \times 7 + 0.01 \times 7 \\&= 14 + 2.1 + 0.07 \\&= 16.17\end{aligned}$$

Associative Property of Multiplication

$$\begin{aligned}5 \times 40 &= 5 \times (4 \times 10) \\&= (5 \times 4) \times 10 \\&= 20 \times 10 \\&= 200\end{aligned}$$

$$\begin{aligned}5.46 \times 30 &= 5.46 \times (10 \times 3) \\&= (5.46 \times 10) \times 3 \\&= 54.6 \times 3 \\&= 163.8\end{aligned}$$

Multiplication Methods for Decimal Numbers**Unit Form**

$$\begin{aligned}4 \times 0.9 &= 4 \times 9 \text{ tenths} \\&= 36 \text{ tenths} \\&= 3.6\end{aligned}$$

Unit Form and Vertical Form

$$5 \times 4.3 = \underline{21.5}$$

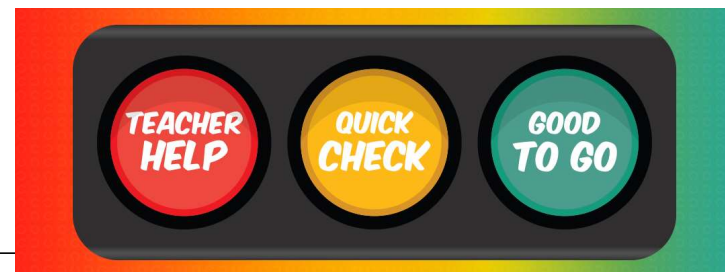
$$\begin{array}{r}43 \text{ tenths} \\ \times \quad 5 \\ \hline 215 \text{ tenths}\end{array}$$

Rewriting the Expression

$$\begin{aligned}5.46 \times 30 &= 5.46 \times (10 \times 3) \\&= (5.46 \times 10) \times 3 \\&= 54.6 \times 3 \\5.46 \times 30 &= 54.6 \times 3\end{aligned}$$

LAND (10-min)

Exit Ticket



 **15**

Name

Date

Multiply. Show your work.

1. $0.54 \times 5 =$ _____

2. $5.03 \times 20 =$ _____

Exit Ticket – PAGE 147

Small Group Time:

Problem Set Pages 143 - 145

Homework:

Page 95 APPLY BOOK