Engage NY Module 1

LESSON 11

Objective: Multiply a decimal fraction by single-digit whole numbers, relate to a written method through application of the area model and place value understanding, and explain the reasoning used.

TAKE OUT THE UNIT

- 1.234 = _____ thousandths
  - Say the number. Think about how many thousandths are in 1.234
    - 1.234 = 1,234 thousandths
- 65.247 = _____ ones _____ thousandths
    - 65.247= 65 ones 247 thousandths

TAKE OUT THE UNIT

- 76.358 = _____ tens _____ thousandths
  - 76.358 = 7 tens 6358 thousandths
- 76.358 = ___ tenths ____ thousandths
  - 76.358 = 763 tenths 58 thousandths
- 76.358 = ___ hundredths ___ thousandths
  - 76.358 = 763 tenths 58 thousandths

Add and Subtract Decimals

- Write 7258 thousandths + 1 thousandth = _____. Write the addition sentence in decimal form.
  - 7.258 + 0.001 = 7.259
- Write 7 ones 258 thousandths + 3 hundredths = _____. Write the addition sentence in decimal form.
  - 7.258 + 0.03 = 7.288

Add and Subtract Decimals

- Write 7258 thousandths + 4 tenths = _____. Write the addition sentence in decimal form.
  - 7.258 + 0.4 = 7.658

- Write 6 ones 453 thousandths + 4 hundredths = _____. Write the addition sentence in decimal form.
  - 6.453 + 0.04 = 6.493

Add and Subtract Decimals

- Write 2 ones 37 thousandths + 5 tenths = _____. Write the addition sentence in decimal form.
  - 2.037 + 0.5 = 2.537

- Write 6 ones 35 hundredths + 7 thousandths = _____. Write the addition sentence in decimal form.
  - 6.35 + 0.007 = 6.357

Add and Subtract Decimals

- Write 4 ones 8 hundredths – 2 ones = ____ ones ___ hundredths. Write the subtraction sentence in decimal form.
  - 4.08 - 2 = 2.08
- Write 9 tenths 7 thousandths – 4 thousandths = _____. Write the subtraction sentence in decimal form.
  - 0.907 – 0.004 = 0.903

Add and Subtract Decimals

- Write 4 ones 582 thousandths – 3 hundredths = _____. Write the subtraction sentence in decimal form.
  - 4.582 – 0.03 = 4.552
- Write 9 ones 708 thousandths – 4 tenths = _____. Write the subtraction sentence in decimal form.
  - 9.708 – 0.4 = 9.308

Add and Subtract Decimals

- Write 4 ones 73 thousandths – 4 hundredths = _____. Write the subtraction sentence in decimal form.
  - 4.073 – 0.04 = 4.033
- Write 9 ones 708 thousandths – 8 tenths = _____. Write the subtraction sentence in decimal form.
  - 9.708 – 0.8 = 8.908

APPLICATION PROBLEM

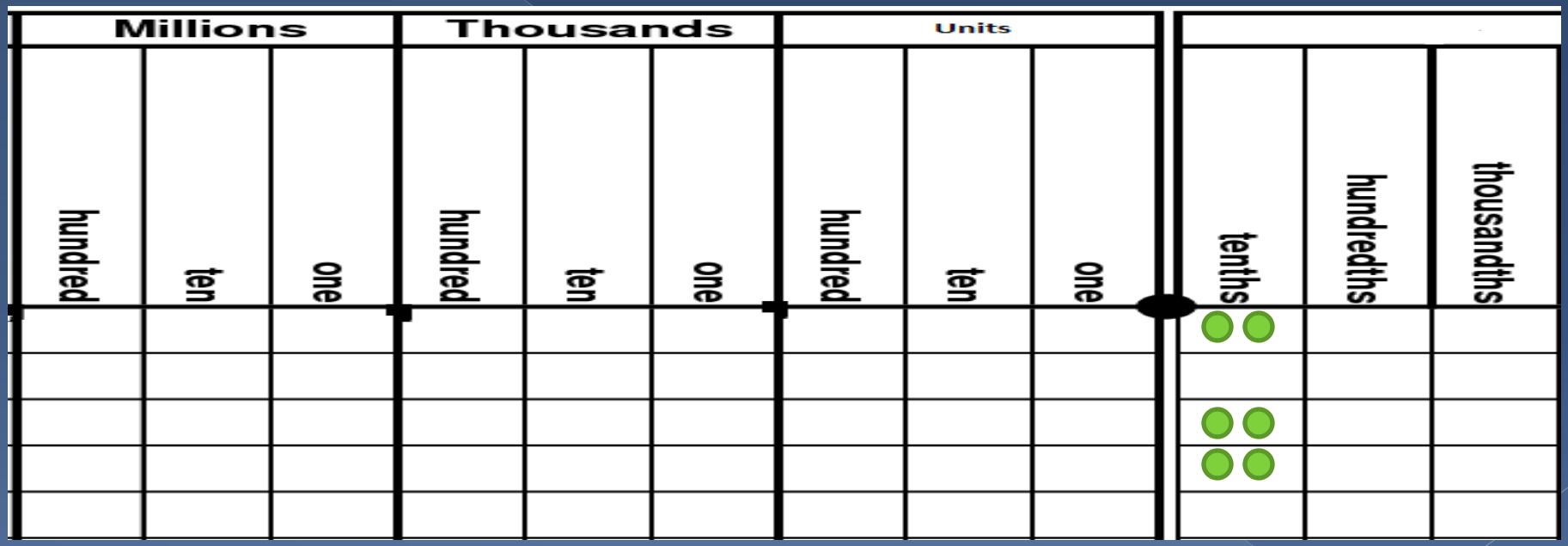
After school, Marcus ran 3.2 km and Cindy ran 1.95 km. Who ran farther? How much farther? Convert your answer to meters. Write a statement of solution.

- Who ran farther? = _____
- How much farther= _____
- Convert answer to meters = _____

- Statement of solution:

Concept Development - Problem 1

- Solve 3 x 0.2 using disks on your place value chart. (3 x 2 tenths = _____)

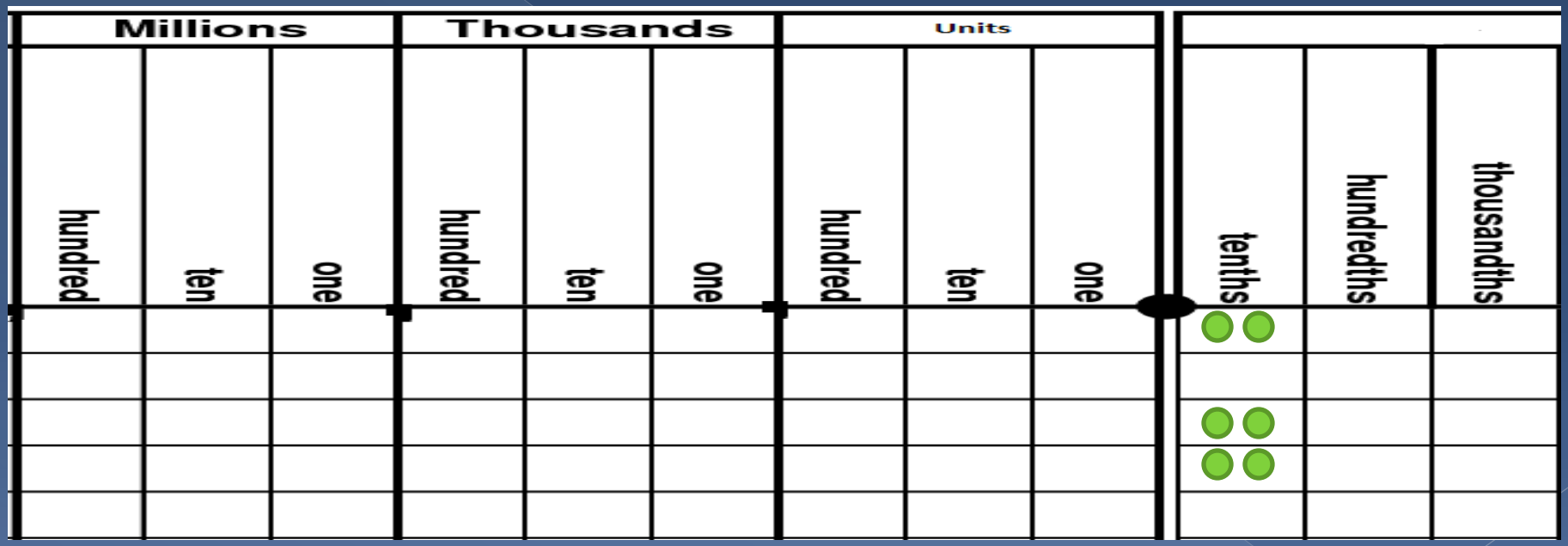


- Place disks to show 2 tenths on your place value mat.
- Make 3 copies of 2 tenths using number disk. How many tenths do you have in all?
- Write a number sentence to express how we made 6 tenths.

$$\begin{array}{r} 0.2 \\ 0.2 \\ +0.2 \\ \hline 0.6 \end{array}$$

Concept Development - Problem 1

- Solve 3 x 0.2 using disks on your place value chart. (3 x 2 tenths = _____)



- Complete the sentence: 3 copies of 2 tenths is _____; and read the equation in unit form: 3 x 0.2 = 0.6.
  - 6 tenths
  - 3 x 2 tenths = 6 tenths

$$\begin{array}{r} 0.2 \\ 0.2 \\ +0.2 \\ \hline 0.6 \end{array}$$

Concept Development - Problem 2

- In your journal, find the value of 3 x 0.3 by drawing a place value mat. Write your number sentence for this problem.

Millions			Thousands			Units					
hundred	ten	one	hundred	ten	one	hundred	ten	one	tenths	hundredths	thousandths

- 3 x 3 tenths = 9 tenths
- 3 x 0.3 = 0.9

Concept Development - Problem 3

- In your journal, find the value of 3 x 0.4 by drawing a place value mat. Write your number sentence for this problem.

Millions			Thousands			Units					
hundred	ten	one	hundred	ten	one	hundred	ten	one	tenths	hundredths	thousandths

- 3 x 4 tenths = 12 tenths = 1.2
- 3 x 0.4 = 1.2

Concept Development - Problem 3

- How was 4 x 3 tenths different from 3 x 3 tenths?
  - We had to bundle the 10 tenths and made 1 one and had 2 tenths left, which we didn't have to do in the previous problems.
- 4 copies of 3 tenths is 12 tenths. 12 tenths is the same as _____.
  - 1 one and 2 tenths = 1.2

Concept Development - Problem 4

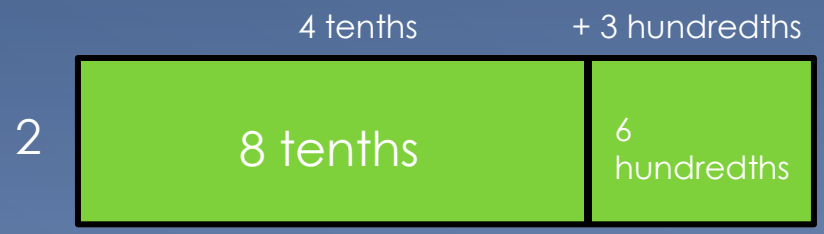
- 2 x 0.43 = _____. How can we use our knowledge of previous problems to solve this?
- Use your place value chart to find the product of 2 x 0.43 hundredths.
- Read what your place value chart shows.

Millions			Thousands			Units					
hundred	ten	one	hundred	ten	one	hundred	ten	one	tenths	hundredths	thousandths

Concept Development - Problem 4

- Read what your place value chart shows.

Millions			Thousands			Units					
hundred	ten	one	hundred	ten	one	hundred	ten	one	tenths	hundredths	thousandths
									●●	●●	
									●●	●	
									●●	●●	
									●●	●	



0.8 + 0.06 = 0.86

0.43
X 2
0.86

Concept Development - Problem 5

- 2 x 0.423 = _____. What is different about this problem?

Millions			Thousands			Units					
hundred	ten	one	hundred	ten	one	hundred	ten	one	tenths	hundredths	thousandths
									●●	●●	●●
									●●		●
									●●	●●	●●
									●●		●

4 tenths + 2 hundredths + 3 thousandths

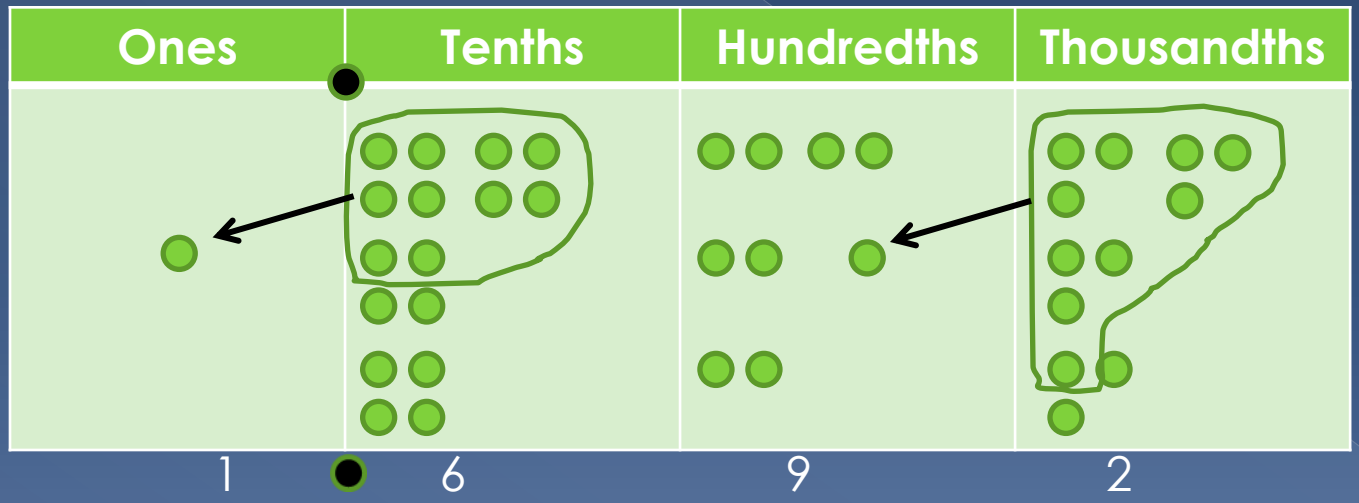
2 | 8 tenths | 4 hundredths | 6 thousandths

0.8 + 0.04 + 0.006 = 0.846

0.423
X 2
0.846

Concept Development - Problem 6

- 4 x 0.423 = _____. Solve this with your disk. Then draw an area model and write an equation with partial products to show how you found the product.



4 tenths + 2 hundredths + 3 thousandths

4	16 tenths	8 hundredths	12 thousandths

1.6 + 0.08 + 0.012 = 1.692

$$\begin{array}{r} 0.423 \\ \times \quad 4 \\ \hline 1.692 \end{array}$$

Concept Development - Problem 7

- Use an area model to represent your thinking as you find the product of 6 x 1.21.
- On your area model, how many sections do you need?
- You need a section for 1 whole, 2 tenths, and 1 hundredth. What are you multiplying each number by?

Concept Development - Problem 7

6 x 1.21 = _____

1 one + 2 tenths + 1 hundredth

6

6 + 1.2 + 0.06 = 7.26

$$\begin{array}{r} 6.00 \\ 1.20 \\ +\ 0.06 \\ \hline 7.26 \end{array}$$

Concept Development - Problem 8

Use an area model to find the product of 7 x 2.41.

	2 ones	+	4 tenths	+	1 hundredth
7	**14 ones**		**28 tenths**		**7 hundredths**

14 + 2.8 + 0.07 = 16.87

$$\begin{array}{r} 14.00 \\ 2.80 \\ +\ 0.07 \\ \hline 16.87 \end{array}$$

Concept Development - Problem 9

Use an area model to find the product of 8 x 2.34.

	2 ones	+	3 tenths	+	4 hundredth
8	**16 ones**		**24 tenths**		**32 hundredths**

16 + 2.4 + 0.32 = 18.72

$$\begin{array}{r} 16.00 \\ 2.40 \\ +\ 0.32 \\ \hline 18.72 \end{array}$$

Problem Set, Debriefing, Exit Ticket, and Homework

- Complete Problem Set in small groups.
- Check answers and discuss difficulties.
- Handout Exit Ticket and independently.
- Handout Homework.