Activity 2.5 **Warm Up**
For use before Activity 2.5

Find the sum.

1.2 .36

1. $0.4 + 0.4 + 0.4$ **2.** $0.12 + 0.12 + 0.12$

4.1 1.23

3. $2.7 + 2.7 + 2.7$ **4.** $0.41 + 0.41 + 0.41$

5. $0.6 + 0.6 + 0.6 + 0.6$ **6.** $0.15 + 0.15 + 0.15 + 0.15$

Lesson 2.5 November 22, 2013

EssentialQuestion

How can you mulply decimals?

LessonTarget

To be able to:

- use a formal rule to mulply decimals.

Self-EvaluationRubric

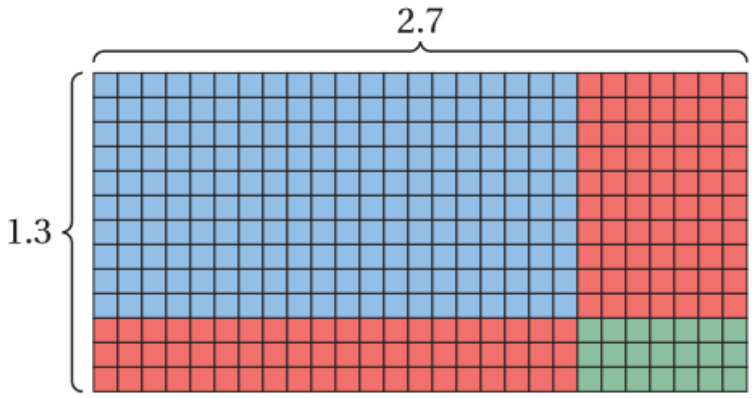
Score	Description
4	I can teach other students how to use a formal rule to mulply decimals.
3	I can use a formal rule to mulply decimals.
2	I recognize a formal rule to mulply decimals.
1	I do not know how to use a formal rule to mulply decimals.

Lesson Target: To be able to use a formal rule to mulply decimals.

ReviewFromYesterday

$2.7 \cdot 1.3$

Arrange base ten blocks to form a rectangle of length 2.7 units and width 1.3 units.

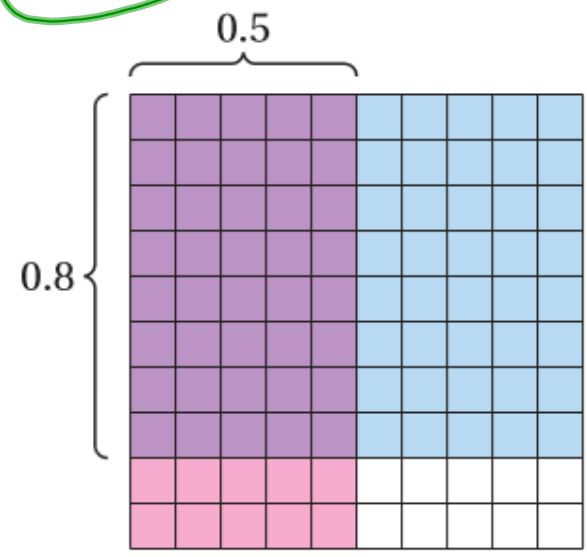


Lesson Target: To be able to use a formal rule to mulply decimals.

ReviewFromYesterday

$0.8 \cdot 0.5$

.40



Lesson Target: To be able to use a formal rule to mulply decimals.

62 18
x 4,

Key Idea

Multiplying Decimals by Whole Numbers

Words Multiply as you would with whole numbers. Then count the number of decimal places in the decimal factor. The product has the same number of decimal places.

Numbers

$$\begin{array}{r} 13.91 \\ \times\ \ 7 \\ \hline 97.37 \end{array}$$ 2 decimal places

$$\begin{array}{r} 6.218 \\ \times\ \ 4 \\ \hline 24.872 \end{array}$$ 3 decimal places

Lesson Target: To be able to use a formal rule to mulply decimals.

1 Multiplying Decimals and Whole Numbers

a. Find 6×3.91.

Estimate $6 \times 4 = 24$

$$\begin{array}{r} {\scriptstyle 5} \\ 3.91 \\ \times \quad 6 \\ \hline 23.46 \end{array}$$

3.91 ← 2 decimal places

23.46 ← Count 2 decimal places from right to left.

∴ So, $6 \times 3.91 = 23.46$.

Reasonable? $23.46 \approx 24$ ✓

b. Find 3×0.016.

Estimate $3 \times 0 = 0$

$$\begin{array}{r} {\scriptstyle 1} \\ 0.016 \\ \times \quad 3 \\ \hline 0.048 \end{array}$$

0.016 ← 3 decimal places

0.048 ← To have 3 decimal places, insert zeros to the left of 48.

.048

∴ So, $3 \times 0.016 = 0.048$.

Reasonable? $0.048 \approx 0$ ✓

Lesson Target: To be able to use a formal rule to mulply decimals.

Key Idea

Multiplying Decimals by Decimals

Words Multiply as you would with whole numbers. Then add the number of decimal places in the factors. The sum is the number of decimal places in the product.

Numbers

4.716 ←		3 decimal places
× 0.2 ←		+ 1 decimal place
0.9432 ←		4 decimal places

Lesson Target: To be able to use a formal rule to mulply decimals.

3 Multiplying Decimals

a. Multiply 4.8×7.2. **Estimate $5 \times 7 = 35$**

$$\begin{array}{rl} 4.8 & \leftarrow \text{1 decimal place} \\ \times\ 7.2 & \leftarrow +\ \text{1 decimal place} \\ \hline 96 & \\ 336 & \\ \hline 34.56 & \leftarrow \text{2 decimal places} \end{array}$$

$\therefore$ So, $4.8 \times 7.2 = 34.56$. **Reasonable? $34.56 \approx 35$** ✓

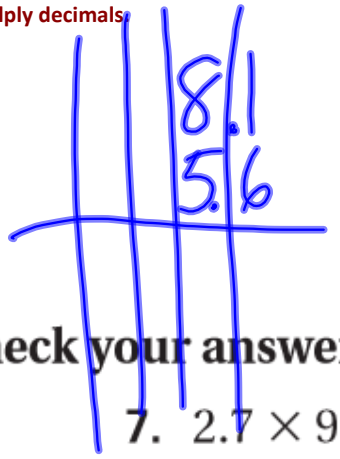
b. Multiply 3.1×0.05. **Estimate $3 \times 0 = 0$**

$$\begin{array}{rl} 3.1 & \leftarrow \text{1 decimal place} \\ \times\ 0.05 & \leftarrow +\ \text{2 decimal places} \\ \hline 0.155 & \leftarrow \text{3 decimal places} \end{array}$$

$\therefore$ So, $3.1 \times 0.05 = 0.155$. **Reasonable? $0.155 \approx 0$** ✓

Lesson Target: To be able to use a formal rule to mulply decimals

TryIt!



On Your Own

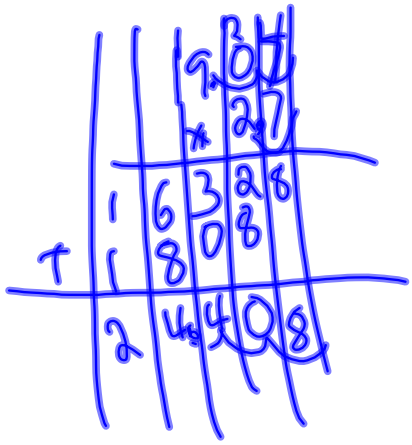
Multiply. Use estimation to check your answer.

6. 8.1×5.6

7. 2.7×9.04

8. 6.32×0.09

9. 1.785×0.2



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NO
HW