

Lesson 2.5

November 22, 2013

Activity
2.5

Warm Up

For use before Activity 2.5

Find the sum.

1. $0.4 + 0.4 + 0.4$ *1.2*

3. $2.7 + 2.7 + 2.7$ *8.1*

5. $0.6 + 0.6 + 0.6 + 0.6$

2. $0.12 + 0.12 + 0.12$ *.36*

4. $0.41 + 0.41 + 0.41$ *1.23*

6. $0.15 + 0.15 + 0.15 + 0.15$

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Essential Question

How can you multiply decimals?

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LessonTarget

To be able to:

- use a formal rule to multiply decimals.

Self-Evaluation Rubric

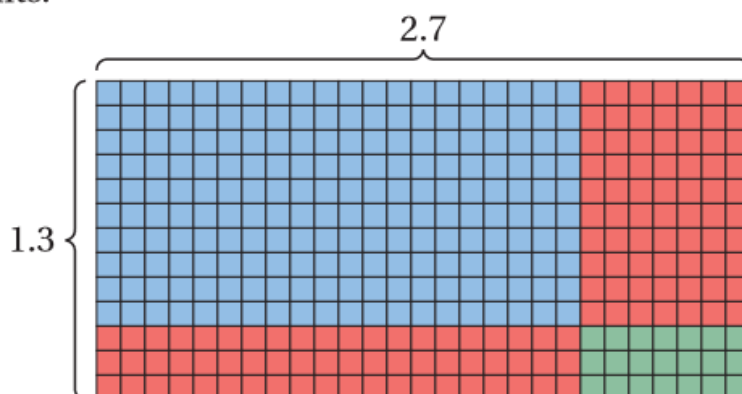
Score	Description
4	I can teach other students how to use a formal rule to multiply decimals.
3	I can use a formal rule to multiply decimals.
2	I recognize a formal rule to multiply decimals.
1	I do not know how to use a formal rule to multiply decimals.

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

Review From Yesterday

$$2.7 \cdot 1.3$$

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 multiply decimals.

8
5

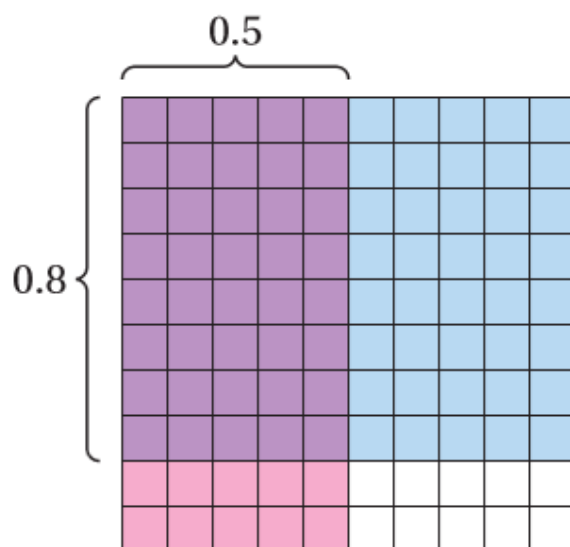
Review From Yesterday

.8
.5

40

$0.8 \cdot 0.5$

.40



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

 **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

1391 x 7

$$\begin{array}{r} 1391 \\ \times 7 \\ \hline \end{array}$$

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

1 Multiplying Decimals and Whole Numbers

a. Find 6×3.91 .

Estimate $6 \times 4 = 24$

⁵ 3.91	←	2 decimal places
<u>× 6</u>		
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 $3 \times 0 = 0$

¹ 0.016	←	3 decimal places
<u>× 3</u>		
0.048	←	To have 3 decimal places, insert zeros to the left of 48.

∴ So, $3 \times 0.016 = 0.048$.

Reasonable? $0.048 \approx 0$ ✓

Lesson Target: To be able to use a formal rule to multiply 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

$$\begin{array}{r} 4.716 \leftarrow 3 \text{ decimal places} \\ \times 0.2 \leftarrow + 1 \text{ decimal place} \\ \hline 0.9432 \leftarrow 4 \text{ decimal places} \end{array}$$

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

3 Multiplying Decimals

a. Multiply 4.8×7.2 .

Estimate $5 \times 7 = 35$

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

48
72

So, $4.8 \times 7.2 = 34.56$.

Reasonable? $34.56 \approx 35$ ✓

b. Multiply 3.1×0.05 .

Estimate $3 \times 0 = 0$

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

So, $3.1 \times 0.05 = 0.155$.

Reasonable? $0.155 \approx 0$ ✓

Handwritten grid-in answer for the multiplication problems. The grid shows the numbers 4.8 and 7.2 in the top row, 3.1 and 0.05 in the second row, and the products 34.56 and 0.155 in the third row. A red checkmark is next to the second product.

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

TryIt!

$$\begin{array}{r} 1.2 \\ \times .2 \\ \hline .24 \end{array}$$

On Your Own

Multiply. Use estimation to check your answer.

6. 8.1×5.6

8. 6.32×0.09

$$\begin{array}{r} 8.1 \\ \times 5.6 \\ \hline 486 \\ + 4050 \\ \hline 4536 \end{array}$$

$$\begin{array}{r} 1.785 \\ \times .2 \\ \hline 3570 \end{array}$$

7. 2.7×9.04

9. 1.785×0.2

$$\begin{array}{r} 9.04 \\ \times 2.7 \\ \hline 6328 \\ + 18080 \\ \hline 24.408 \end{array}$$

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NO
HW