October 25, 2013

$$\begin{array}{r} 0.4 \\ 0.4 \\ 0.4 \\ \hline 1.2 \end{array}$$

$$\begin{array}{r} .12 \\ .12 \\ .12 \\ \hline 6 \end{array}$$

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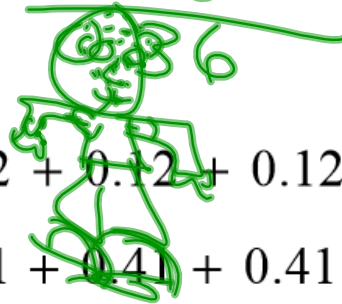For use before Activity 2.5

Find the sum.

1. $0.4 + 0.4 + 0.4$

2. $0.12 + 0.12 + 0.12$

3. $2.7 + 2.7 + 2.7$

4. $0.41 + 0.41 + 0.41$

5. $0.6 + 0.6 + 0.6 + 0.6$

6. $0.15 + 0.15 + 0.15 + 0.15$

$$\begin{array}{r} \overset{2}{2}.7 \\ 2.7 \\ +2.7 \\ \hline 8.1 \end{array} = \begin{array}{r} 2.7 \\ \times 3 \\ \hline 8.1 \end{array}$$

Lesson 2.5   October 25, 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.

🔑 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

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

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

1 Multiplying Decimals and Whole Numbers

a. Find 6×3.91.

Estimate $6 \times 4 = 24$

$$
\begin{array}{r}
5 \\
3.91 \quad \leftarrow \boxed{\text{2 decimal places}} \\
\times \quad 6 \\
\hline
23.46 \quad \leftarrow \boxed{\begin{array}{l}\text{Count 2 decimal places} \\ \text{from right to left.}\end{array}}
\end{array}
$$

⋰· So, $6 \times 3.91 = 23.46$.

Reasonable? $23.46 \approx 24$ ✔

b. Find 3×0.016.

Estimate $3 \times 0 = 0$

$$
\begin{array}{r}
1 \\
0.016 \quad \leftarrow \boxed{\text{3 decimal places}} \\
\times \quad 3 \\
\hline
0.048 \quad \leftarrow \boxed{\begin{array}{l}\text{To have 3 decimal} \\ \text{places, insert zeros} \\ \text{to the left of 48.}\end{array}}
\end{array}
$$

⋰· So, $3 \times 0.016 = 0.048$.

Reasonable? $0.048 \approx 0$ ✔

🔑 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

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

3 **Multiplying Decimals**

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

$$\begin{array}{r} 4.8 \\ \times\ 7.2 \\ \hline 9\ 6 \\ 3\ 3\ 6\ \\ \hline 3\ 4.5\ 6 \end{array}$$

4.8 ⟵ 1 decimal place
× 7.2 ⟵ + 1 decimal place
3 4.5 6 ⟵ 2 decimal places

⋮· So, $4.8 \times 7.2 = 34.56$.   Reasonable? $34.56 \approx 35$ ✔

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

$$\begin{array}{r} 3.1 \\ \times\ 0.0\ 5 \\ \hline 0.1\ 5\ 5 \end{array}$$

3.1 ⟵ 1 decimal place
× 0.0 5 ⟵ + 2 decimal places
0.1 5 5 ⟵ 3 decimal places

⋮· So, $3.1 \times 0.05 = 0.155$.   Reasonable? $0.155 \approx 0$ ✔

$$\begin{array}{r} 4.8 \\ \times\ 7.2 \\ \hline 9\ 6 \\ 3\ 3\ 6\ 0 \\ \hline 34.56 \end{array}$$

TryIt!

Try numbers 6 - 9 on page 87 of your Big Ideas Text Book.

$$\begin{array}{r} 8.1 \\ \times\, 5.6 \\ \hline \end{array}$$

$$
\begin{array}{r}
\overset{2}{7}81499.\overset{.}{04} \\
27 \\
\hline
6328 \\
+\ 18080 \\
\hline
24408 \\
\end{array}
$$

$$
\begin{array}{l}
9.04 \\
27 \\
\hline
6328 \\
\end{array}
$$

Assignment

Do numbers:

13, 15, 20, 27, 30, 33, 36, 46 - 50, 63, 64, 68 & 69

on pages 89, 90, & 91 of your Big Ideas Text Book.

Lesson 2.5   October 25, 2013

EssentialQuestion

How can you mulply decimals?

Lesson 2.5   October 25, 2013

LessonTarget

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Homework

Big Ideas Record and

Pracce Journal

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