The Distributive Property

| Objective 1 | Understand the Distributive Property |

The Distributive Property

The Distributive Property states that multiplication can be distributed across addition and subtraction.

$$x(a+b) = ax + bx$$
$$a(x-y) = ax - ay$$
$$4(10+1) = 40 + 4$$
$$13(10-2) = 130 - 26$$

The distributive property can be helpful when performing multiplication.

$$8 \cdot 7 = 8(5+2) = 40 + 16 =$$

$$7 \cdot 13 = 7(10+3) = 70 + 21 =$$

$$12 \cdot 9 = 12(10-1) = 120 - 12 =$$

$$13 \cdot 8 = 13(10-2) = 130 - 26 =$$

$$9(314) = 9(300+10+4) = 2{,}700 + 90 + 36 =$$

Recall that when performing multiplication using the vertical format, you are using the distributive property!

Example 1: Find the product of 256 and 8 using the vertical format for multiplication. Notice how it relates to the calculation below where the Distributive Property is being used.

$$8(256) = 8(200 + 50 + 6) = 1,600 + 400 + 48 = 2,048$$

$$\begin{array}{r} 256 \\ \times \quad 8 \\ \hline \end{array}$$

Answer the following homework questions.

In Exercises 32 – 35, find each product.

1) $\begin{array}{r} 436 \\ \times \quad 9 \\ \hline \end{array}$ 2) $\begin{array}{r} 212 \\ \times \quad 7 \\ \hline \end{array}$ 3) $\begin{array}{r} 508 \\ \times \quad 6 \\ \hline \end{array}$ 4) $\begin{array}{r} 978 \\ \times \quad 4 \\ \hline \end{array}$