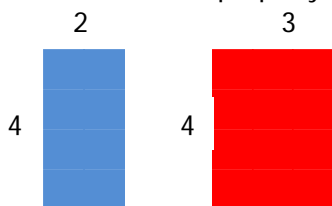


Properties of Operations

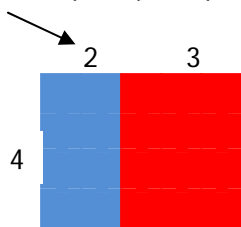
The **distributive property** will help us understand mathematical relationships among numbers and operations using multiplication and addition. It is important to remember that when we use the **distributive property**, we must *always* use the **order of operations**.



The **distributive property** illustrated: $[4 \cdot (2 + 3) = (4 \cdot 2) + (4 \cdot 3)]$



$$[4 \cdot (2 + 3) = (4 \cdot 2) + (4 \cdot 3)]$$



In other words, the **distributive property** states:

multiplying a sum by a number $=$ multiplying each addend by the number and then adding the products

$$2(3+5) \quad \text{or} \quad (2 \times 3) + (2 \times 5)$$

These **two expressions** mean the same thing.
 We know that a **variable expression**, like a phrase, has no equal sign (=).

Properties of Operations

The **distributive property** helps

- to rearrange parentheses in solving equations. $2(3+5) = (2 \times 3) + (2 \times 5)$
- to simplify expressions.

$$\begin{array}{l} \text{Simplify:} \quad 3 \times 56 \\ \quad \quad \quad (3 \times 50) + (3 \times 6) \\ \quad \quad \quad 150 + 18 \\ \quad \quad \quad 168 \end{array}$$

Look at these examples using the **distributive property**, including equations and variable expressions:

1. $2(2 + 3) = 2 \times 2 + 2 \times 3$
2. $3 \times 3 + 3 \times 2 = 3(3 + 2)$
3. $10 \times 14 = (10 \times 10) + (10 \times 4)$

The **distributive property** helps with understanding mathematical relationships.

PRACTICE!

Use the distributive property to solve the equation below.

1. $4(3 + 2)$

Simplify the expression using the distributive property.

2. 64×7