

Distributive Property

Part 1: The Distribution

The distributive property is one of the most important in Algebra. Students need to really understand it and be able to apply it in order to have success in Algebra.

The Distributive Property in words is, “The sum of two addends multiplied by a number is the sum of the product of each addend and the number.”

This is much easily understood with symbols:

For any numbers a , b , and c ,

$$a(b + c) = ab + ac$$

and

$$(b + c)a = ba + bc$$

Let's take a look at the distributive property in action.

Example 1:

Restate using the distributive property.

$$8(50 + 4)$$

$$\underline{\quad}(50) + \underline{\quad}(4)$$

What goes in the blanks?

That's right! The 8 is DISTRIBUTED over both numbers in the ().

$$8(50) + 8(4)$$

Question:

Will you always multiply by the same number?

Answer:

Yes. Whatever number is outside of the parentheses is the number by which you will multiply.

Example 2:

Restate using the distributive property.

$$(5 + 7)y$$

$$(5)\underline{\quad} + (7)\underline{\quad}$$

Do you know what goes in the blanks?

$$(5 + 7)y$$

$$(5)y + (7)y$$

Do you think that you can do this backwards?
Let's look at Example 2 backwards.

$$5y + 7y$$

What do $5y$ and $7y$ have in common?

$$5y + 7y$$

That's right. They share a y in common.

Now, take what they share in common and put it first.
Then what is left goes inside the ().

$$y(5 + 7) \quad \text{or} \quad (5 + 7)y$$

$$5y + 7y = y(5 + 7)$$

That is the distributive property!

Let's try one more, before you practice on your own.

Example 3:

Restate using the distributive property.

$$2(r + 6s)$$

$$\underline{\quad}(r) + \underline{\quad}(6s)$$

$$2r + 2(6s)$$

Practice. Restate using the distributive property.
Scroll down for the answers.

1. $9(3 + 2x)$
2. $(6 + 3e)4$
3. $5(7 + 2s)$

Answers.

- | | | |
|----|-------------|----------------|
| 1. | $9(3 + 2x)$ | $9(3) + 9(2x)$ |
| 2. | $(6 + 3e)4$ | $(6)4 + (3e)4$ |
| 3. | $5(7 + 2s)$ | $5(7) + 5(2s)$ |