

Lesson 3.1a Distributive Property

EQ: What is the Distributive Property and how do we use it?

- Distribute means to Pass out to or Give to
- When you use **the distributive property**, you are **GIVING** (Distributing) the number or variable on the OUTSIDE of the parenthesis to both of the numbers or variables on the INSIDE of the parenthesis.

- + and - go with the number or variable to the right.

The Distributive Property:

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

When two things are next to each other, it means multiplication!

REMEMBER: You always do what's in the parenthesis first...
But, in Algebra, you may not be able to add the b and the c...
So, the Distributive Property tells you what to do...

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

You distribute the a to the b and, then you distribute the a to the c.

EX 1: The OFFICIAL ORDER OF OPERATIONS WAY
(IF you can combine the numbers inside the parenthesis).

$$2(3+4) = 2(7) = 14$$

EX 2: USING DISTRIBUTIVE PROPERTY with numbers

$$2(3+4) \rightarrow 2(3+4) \rightarrow 2(3)+2(4)$$

DISTRIBUTE the 2 to the 3...and then the 2 to the 4...

$$= 6 + 8 = 14$$

Then Multiply, and then Add

EX 3: USING the DISTRIBUTIVE PROPERTY with numbers & variables

$$a. \quad 8(c-2) =$$

$$8(c) \quad 8(-2)$$

$$8c - 16$$

$$b. \quad y(9-c+d) =$$

$$y(9) \quad y(-c) \quad y(d)$$

EX 4: USING the DISTRIBUTIVE PROPERTY with negatives on the OUTSIDE

$$a. \quad -6(x-4) =$$

$$-6(x) \quad -6(-4)$$

$$-6x + 24$$

$$b. \quad -1(7-b+d) =$$

$$-1(7) \quad -1(-b) \quad -1(d)$$

$$-7 + b - d$$

Guided Practice:

1. $5(8-3)$
 $5(5) = 25$

2. $-3(4+3)$
 $-3(7) = -21$

3. $4(f+g)$
 $4(f) \quad 4(g)$
 $4f + 4g$

4. $-1(8-t)$
 $-1(8) \quad -1(-t)$
 $-8 + t$

5. $-2(5+w-2v)$
 $-2(5) \quad -2(w) \quad -2(-2v)$
 $-10 - 2w + 4v$

6. $-7(s-u+1)$
 $-7(s) \quad -7(-u) \quad -7(1)$
 $-7s + 7u - 7$

SIMPLIFY each expression using the **DISTRIBUTIVE PROPERTY!**

1) $6(1 - 5m)$

2) $-2(1 - 5v)$

3) $3(4 + 3r)$

4) $3(6r + 8)$

5) $4(8n + 2)$

6) $-(-2 - n)$

7) $-6(7k + 11)$

8) $-3(7n + 1)$

9) $-6(1 + 11b)$

10) $-10(a - 5)$

11) $-3(1 + 2v)$

12) $-4(3x + 2)$

13) $(3 - 7k) \cdot -2$

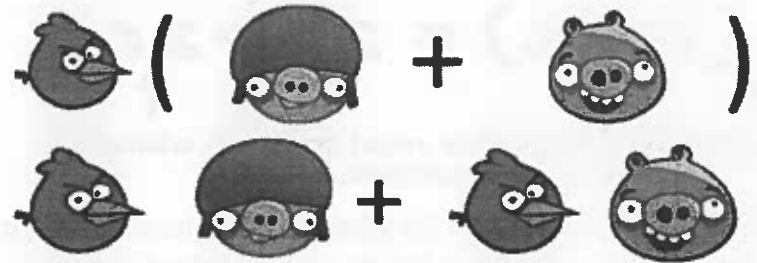
14) $-20(8x + 20)$

15) $(7 + 19b) \cdot -15$

16) $(x + 1) \cdot 14$

THE DISTRIBUTIVE PROPERTY

-Multiply (X) the number/variable on the *OUTSIDE*, by *EVERYTHING* on the *INSIDE*, ONE at a TIME!



Or

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

$3(\overset{\curvearrowright}{x + 5}) = 3x + 15$

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

$(\overset{\curvearrowright}{x + 5})3 = 3x + 15$

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

$3(\overset{\curvearrowright}{x - 5}) = 3x - 15$

$(b - c)a = ba - ca$

$(\overset{\curvearrowright}{x - 5})3 = 3x - 15$

$-(a + b) = -a - b$

$-(x + 5) = -x - 5$

$-(a - b) = -a + b$

$-(x - 5) = -x + 5$