

THE DISTRIBUTIVE PROPERTY

↳ example 1:

$$3(5+2)$$

To follow the Order of Operations,
we first evaluate the parenthesis

$$\begin{aligned} 3(5+2) &= 3(7) \\ &= 21 \end{aligned}$$

But, we could also distribute the 3:

$$\begin{aligned} 3(5+2) &= 3(5) + 3(2) \\ &= 15 + 6 \\ &= 21 \end{aligned}$$

In this example, we didn't HAVE
to use the distributive property.

But in some cases, we MUST use
the distributive property.

consider: $3(x+2)$

here we can't simplify the
parenthesis since x and 2 are
not like terms, so we MUST
use the distributive property.

$$\begin{aligned} 3(x+2) &= 3(\quad) + 3(\quad) \\ &= \underline{\quad} + \underline{\quad} \end{aligned}$$

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EXAMPLE 2:

a) $-3(x+2)$

b) $2(x+y+3)$

c) $2(x-y+3)$

d) $-2(x-y+3)$

e) $4(a+b-3)$

↳ EXAMPLE 3:

$$-1(a-b+c)$$

NOTE: Since multiplying by 1 doesn't change the number, we usually don't write the 1.

So, $-1(a-b+c)$ is the same as $-(a-b+c)$

$$\begin{aligned} -(a-b+c) &= (-1)(\quad) - (-1)(\quad) + (-1)(\quad) \\ &= \\ &= \end{aligned}$$

↳ EXAMPLE 4:

a) $-3(a-2b)$

b) $-2(a-2b+3c)$

c) $2-(a-b+c)$

↳ example 5:

SIMPLIFY $6(2x+1) - 2$

to follow the Order of Operations,
we must multiply before we subtract.

$$\begin{aligned} 6(2x+1) - 2 &= \\ &= \\ &= \end{aligned}$$

↳ example 6:

SIMPLIFY $6(3y-2) + 4y$

↳ example 7: SIMPLIFY:

a) $2(x+1) + 4(x-3)$

b) $-3(x+1) - 4(x-3)$

↳

EXAMPLE 8:

a) Evaluate $x+2$ for $x=6$

b) Evaluate $-a+3$ for $a=-2$

c) Evaluate $-3+4x$ for $x=-1$

The DISTRIBUTIVE PROPERTY practice problems

Simplify:

1. $4(7+3)$

2. $3(x-2)$

3. $-9(x-1)$

4. $-(x+y-z)$

5. $3(4x-1)-2x$

6. Evaluate $-x+1$ for $x=-1$