

## Algebra 3-7: The Distributive Property & Removing Parentheses

### Warm-Up

Simplify.

1.  $-3r + 4x^2 - r - 2x^2$

$$2x^2 - 4r$$

2.  $3xy^2 + 2x^2y - 1xy^2$

$$2xy^2 + 2x^2y$$

Solve. Show steps. Check.

3.  $3m - 2m = 10$

$$\begin{array}{l} m = 10 \\ m = 10 \\ 30 - 20 = 10 \\ 10 = 10 \checkmark \end{array}$$

4.  $4x - 3 + 3x = 4$

$$\begin{array}{r} 7x - 3 = 4 \\ +3 \quad +3 \\ \hline 7x = 7 \\ \hline x = 1 \end{array} \quad (x=1)$$

□

Vocab	Definition	Example
Distributive Property	$a(c+b) = ac + ab$	$4(x+2) = 4x+8$

When using the distributive property, we multiply the outside number by the inside numbers. We always separate terms with either a addition or subtraction sign.

$b+3$

+	$b$			
$a$	$ab$	$a$	$a$	$a$
$a$	$ab$	$a$	$a$	$a$

$2a \rightarrow$

Area =  $2a(b+3)$

=  $2ab + 6a$

$2ab + 6a$

**Examples**

Simplify.

1.  $4(3x + 5)$

$12x + 20$

$x \cdot 5x$   
2.  $x(5x - 3)$

$5x^2 - 3x$

3.  $2(3 - z)$

$6 - 2z$

4.  $-4(y + 3 + x)$

$-4y + -12 + -4x$   
OR  
 $-4y - 12 - 4x$

5.  $-2z(z - 3)$

$-2z^2 + 6z$   
OR  
 $-2z^2 - -6z$   
 $-2z^2 + 6z$

6.  $-3n(m + 3 - p)$

$-3nm - 9n + 3np$

Solve. Show steps. Check.

10.  $-3(2x - 1) = 15$

$$\begin{array}{r} -6x + \cancel{3} = 15 \\ \phantom{-6x} \quad \quad \quad \cancel{-3} \\ \hline -6x = 12 \\ \underline{-6} \quad \quad \underline{-6} \\ \boxed{x = -2} \end{array}$$

Calculate mentally.

11. 3 shirts at \$9.98 each

$$\begin{array}{r} 3(10 - .02) \\ 30 - .06 \\ \boxed{\$29.94} \end{array}$$

12. 4 times \$25.02

$$\begin{array}{r} 4(25 + .02) \\ 100 + .08 \\ \boxed{\$100.08} \end{array}$$