Bell Work

Simplify the following:

    1. $x(2x - 4)$

    2. $-7(x - 2)$

Lesson 1.4
The Distributive Property

- Objectives:
    — Use the Distributive Property to evaluate expressions.
    — Use the Distributive Property to simplify expressions.

Distributive Property:

$$A(B + C) = AB + AC$$

$$(B + C)A = BA + CA$$

$$3(2 + 5) = 3 \cdot 2 + 3 \cdot 5$$
$$3(7) = 6 + 15$$
$$21 = 21$$

$$4(9 - 7) = 4 \cdot 9 - 4 \cdot 7$$
$$4(2) = 36 - 28$$
$$8 = 8$$

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Examples

A. Rewrite 12(y + 3) using the Distributive Property. Then simplify.

$12(y + 3)$ = $12 \bullet y + 12 \bullet 3$ Distributive Property

      = $12y + 36$ Multiply.

B. Rewrite 4(y^2 + 8y + 2) using the Distributive Property. Then simplify.

$4(y^2 + 8y + 2) = 4(y^2) + 4(8y) + 4(2)$ Distributive Property

      = $4y^2 + 32y + 8$ Multiply.

Practice

A. Simplify $6(x - 4)$.

B. Simplify $3(x^3 + 2x^2 - 5x + 7)$.

C. Simplify $(x^2 - 2x + 3)(-2)$

<u>Combining Like Terms</u>

<u>**Like Terms**</u> - contain the same variables, with corresponding variables having the same power
(*SAME LETTER(S) <u>AND</u> EXPONENTS*)

$$5x^2 + 2x - 4 \qquad 6a^2 + a^2 + 2a$$

three terms   like terms   unlike terms

<u>**Coefficient**</u> - the numerical factor of a term
(number in front of a variable)

<u>**Simplest Form**</u> - an expression that contains no like terms or parentheses
(Must add coefficients of like terms)

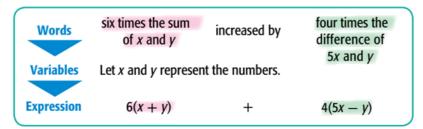### Simplify $17a + 21a$.

Simplify $12b^2 - 8b^2 + 6b$.

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Simplify the following:

1) $14x - 9x + 3 - 2x^2$

2) $-8y^2 - 10y + 12y^2 + 2xy$

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Write and Simplify Expressions

Use the expression *six times the sum of x and y increased by four times the difference of 5x and y.*

A. Write an algebraic expression for the verbal expression.

Words	six times the sum of x and y	increased by	four times the difference of $5x$ and y
▼			
Variables	Let x and y represent the numbers.		
▼			
Expression	$6(x + y)$	$+$	$4(5x - y)$

B. Simplify the expression and indicate the properties used.

$6(x + y) + 4(5x - y)$

$= 6(x) + 6(y) + 4(5x) - 4(y)$ Distributive Property

$= 6x + 6y + 20x - 4y$ Multiply.

$= 6x + 20x + 6y - 4y$ Commutative (+)

$= (6 + 20)x + (6 - 4)y$ Distributive Property

$= 26x + 2y$ Substitution

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Practice

Use the expression *three times the difference of 2x and y increased by two times the sum of 4x and y.*

A. Write an algebraic expression for the verbal expression.

B. Simplify the expression $3(2x − y) + 2(4x + y)$.

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Using Distribution for Mental Math

You can use the Distributive Property to make mental math easier.

Example 2 Mental Math

Use the Distributive Property to rewrite 7 · 49. Then evaluate.

$7 \cdot 49 = 7(50 - 1)$ Think: $49 = 50 - 1$

$\quad\quad = 7(50) - 7(1)$ Distributive Property

$\quad\quad = 350 - 7$ Multiply.

$\quad\quad = 343$ Subtract.

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Practice

Use the Distributive Property to rewrite 12 ● 82. Then evaluate.

12 ● 82 = (10 + 2)82   Think: 12 = 10 + 2

        = 10(82) + 2(82)   Distributive Property

        = 820 + 164   Multiply.

        = 984   Add.

Use the Distributive Property to rewrite 6 ● 54. Then evaluate.

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Homework!

Pages 29-30
13-19 Odd, 25-37 Odd, 38, 39, 41

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