TOPIC: SIMPLIFYING EXPRESSIONS

Like Terms

◆ Recall: Algebraic expressions combine numbers and variables using operations. Ex: $2x + 5$

► The **terms** of an expression are the parts of an expression separated by ____ or ____ signs.

Like Terms	*Not* Like Terms
[SAME | DIFFERENT]	**[SAME | DIFFERENT]**
variables _____ *exponents*	*variables* _____ *exponents*
$4x^2$ and $7x^2$	$4x^2$ and $7x^3$
$2ab$ and $8ba$	$2a$ and $2ba$
$5x^2yz$ and $-10x^2yz$	$5x^2yz$ and $-10xy^2z$

◆ You can combine **like terms** by adding or subtracting their _____. You *CANNOT* combine **unlike terms**.

EXAMPLE Combine like terms in the following expressions.

$(\boldsymbol{A})$ $4x^2 + 7x^2$

$(\boldsymbol{B})$ $2ab + 8ba$

$(\boldsymbol{C})$ $5x^2yz$ and $-10xy^2z$

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EXAMPLE In each expression, combine any like terms.

(***A***) $6a^2 + 8a^2$

(***B***) $7x^2 + 8x + 4$

EXAMPLE Combine like terms such that each variable only appears once.

(***A***) $3p + (-9p) + 4 - 2 + p$

(***B***) $6z - 4 + 11z + 9$

PRACTICE Simplify by combining like terms.

(***A***) $3b + 4b + b$

(***B***) $10x + 6 - 2x$

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Multiplying Expressions

◆ We can use the properties of multiplying *numbers* to multiply *expressions*.

Recall

Associative Property	*Distributive Property*
$a(b \cdot c) = (a \cdot b)c$	$a(b + c) = a \cdot b + a \cdot c$

EXAMPLE Multiply.

(A) $3(2x)$

(B) $3(2 + x)$

(C) $2(4x - 5)$

PRACTICE Multiply.

(A) $-5(7x)$

(B) $12(5b)$

(C) $6(8 + 9z)$

(D) $-1(y + 2x + 3)$

PRACTICE Multiply.

(A) $-5(-9x^2)$

(B) $3(4x^2yz)$

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Simplify Expressions

◆ An algebraic expression is *fully simplified* when there are ___ parentheses & all like terms have been _____.

EXAMPLE Simplify the following expressions.

$(\boldsymbol{A})$ $2(3+5x)+7$

$(\boldsymbol{B})$ $3(2x+4)-(5+8x)$

HOW TO: Simplify Algebraic Expressions

1) **Multiply** using distributive prop. to remove **( )**
2) **Identify** like terms *(same variable/same exponent)*
3) **Group** like terms by writing _____ each other
4) **Combine** like terms $(+/-$ _____$)$

TOPIC: SIMPLIFYING EXPRESSIONS

PRACTICE Simplify the expression.

HOW TO: Simplify Algebraic Expressions

1) **Multiply** using distributive prop. to remove **( )**
2) **Identify** like terms *(same variable/same exponent)*
3) **Group** like terms by writing next to each other
4) **Combine** like terms (+/ − coefficients)

(***A***)

$-3(x+6)+5(11-9x)$

(***B***)

$8+6(5-3y)$

(***C***)

$11a+5-3b+2a+9b$

(***D***)

$2c+3(7+c)-9$