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.

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

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

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

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EXAMPLE In each expression, combine any like terms.

$(\boldsymbol{A})$ $6a^2 + 8a^2$

$(\boldsymbol{B})$ $7x^2 + 8x + 4$

$(\boldsymbol{C})$ $-y^5 + 3y^5$

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

$(\boldsymbol{A})$ $3p + (-9p) + 4 - 2 + p$

$(\boldsymbol{B})$ $6z - 4 + 11z + 9$

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

$(\boldsymbol{A})$

$$\frac{3}{4}x + \frac{1}{2}x$$

$(\boldsymbol{B})$

$$0.5z + .25z - 1.35 + 1.55$$

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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.

(A) $-z + 2(3 + 5z)$

(B) $2a^2 - (6a^2 - b^2) + 5b^2$

HOW TO: Simplify Algebraic Expressions

1) **Distribute** constants/variables in **( )**
2) **Identify** like terms *(same variable/same exponent)*
3) **Group** like terms by writing _____ each other
4) **Combine** like terms $(+/-$ _____$)$

PRACTICE Simplify the following by combining like terms.

(A) $\frac{1}{2}x + \frac{3}{4}x - \frac{1}{2}y + \frac{1}{2}y$

(B) $2m + 3n - p + 4m - 2n + 5p$

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PRACTICE Simplify the expressions.

$(\boldsymbol{A})$ $7(x-3)+10$

$(\boldsymbol{B})$ $6(2a-b)+4(3a+5b)$

$(\boldsymbol{C})$ $-3[2x-(4-x)]$

PRACTICE Simplify the expressions.

$(\boldsymbol{A})$ $3x^2+5x^3-2x+4x^2-x^3+8x+10$

$(\boldsymbol{B})$ $\frac{1}{2}x^2+\frac{3}{4}xy-\frac{1}{3}x^2+\frac{1}{4}xy$