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.

(A)

$$4x^2 + 7x^2$$

(B)

$$2ab + 8ba$$

(C)

$$5x^2yz - 10xy^2z$$

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EXAMPLE   In each expression, combine any like terms.

(**A**)

$6a^2 + 8a^2$

(**B**)

$7x^2 + 8x + 4$

(**C**)

$-y^5 + 3y^5$

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

(**A**)

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

(**B**)

$6z - 4 + 11z + 9$

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Combine like terms such that each variable only appears once.

(**A**)

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

(**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)

$$2m + 3n - p + 4m - 2n + 5p$$

TOPIC: SIMPLIFYING EXPRESSIONS

Simplify the expressions.

(**A**)
$$7(x - 3) + 10$$

(**B**)
$$6(2a - b) + 4(3a + 5b)$$

(**C**)
$$-3[2x - (4 - x)]$$

Simplify the expressions.

(**A**)
$$3x^2 + 5x^3 - 2x + 4x^2 - x^3 + 8x + 10$$

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

EXAMPLE Simplify the expression by first expanding and then combining like terms.

$$3x(2x^2 - 5xy) - 4y(x^2 - 2xy)$$