

Worksheet 4-7: Multiplying Polynomials**Multiplying 2 monomials or algebraic terms:**

Step 1 - **MULTIPLY the signs** of the coefficients (the number before the variable).

Step 2 - **MULTIPLY the coefficients** (the number before the variable).

Step 3 - **MULTIPLY the variables**.

Note: If the variables are the same, **ADD** the exponents.

Example 1: Terms with Different Variables

(a) $(3x)(6y)$

$= (3)(6)(x)(y)$

$= 18xy$

(b) $(-5a)(8b)$

(c) $(-9m)(-2n)$

Example 2: Terms with Same Variables

(a) $(6x)(8x)$

$= (6)(8)(x)(x)$

$= 48x^2$

(b) $(-3a^2)(10a)$

(c) $(-4m)(-11m^2)$

Example 3: Multiplying 3 Monomials

(a) $(x)(2x)(-3x)$

(b) $(-a)(-9a)(6a)$

(c) $(-2m)(-10m)(-5m)$

Practice:**1.** Simplify:

(a) $(2a)(5b)$

(b) $(2n)(n^2)$

(c) $(3x)(6x)(x)$

(d) $(-3x^2)(9x)$

(e) $(-5y)(-2y^2)$

(f) $(-a)(4a)(12a)$

Multiplying a polynomial by a monomial or expanding the brackets.

$$2(x^2 + 3x + 5)$$

You distribute what is outside the brackets to what is inside the brackets!

Outside the brackets: 2

Inside the brackets: $x^2 + 3x + 5$

Then what??

You multiply what is outside to what is inside!!

To Expand Brackets:

$$2(x^2 + 3x + 5)$$

We Multiply 2 to x^2 , $3x$ and 5 :

$$2(x^2) + 2(3x) + 2(5)$$

After Multiplying We Have:

$$2x^2 + 6x + 10$$

Practice:

Simplify each.

1. $4(6x + 1)$

$$= (4)(6x) + (4)(1)$$

$$= 24x + 4$$

Product is **positive.**

You ADD.

2. $2x(3x - 1)$

$$= (2x)(3x) + (2x)(-1)$$

$$= 6x^2 - 2x$$

Product is **negative.**

You SUBTRACT.

3. $-4y(5y + 7)$

$$= (-4y)(5y) + (-4y)(7)$$

$$= -20y^2 - 28y$$

4. $-3(2y - 9)$

$$= (-3)(2y) + (-3)(-9)$$

$$= -6y + 27$$

5. $7x(x + 5)$

6. $2m(4m - 3)$

7. $-2y(y + 3)$

8. $-5n(6n - 2)$

9. $m(m^2 + 2m + 8)$

10. $-x(2x^2 + 5x - 11)$

Multiplying Polynomial Bingo

Instructions: (1) For the following bingo grid, write numbers 1-9 randomly in the small boxes.
 (2) Following the question numbers in sequence, simplify each expression inside the corresponding bingo grid box.

1. $5(7x^3)$

2. $(6a)(12a)$

3. $(-8m^2)(-9m)$

4. $(7y)(4y)(-3y)$

5. $6(3x+5)$

6. $4b^2(b-9)$

7. $5x(x^2 + 6x - 10)$

8. $-2a(5a^2 + 7a + 8)$

9. $-x(x^2 - 11x + 1)$

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