

# MULTIPLYING POLYNOMIALS

## Multiplying Monomials

$$(5x^5y)(6x^7y^9)$$

$$(5 \cdot 6)(x^5 \cdot x^7)(y^1 \cdot y^9) = \boxed{30x^{12}y^{10}}$$

<p>A) <math>(-3x^3y^2)(4xy^5)</math>  <math>(-3 \cdot 4)(x^3 \cdot x^1)(y^2 \cdot y^5)</math>  <math>-12x^4y^7</math></p>	<p>C) <math>(\frac{1}{2}a^3b)(a^2c^2)(6b^3)</math>  <math>(\frac{1}{2} \cdot 6)(a^3 \cdot a^2)(b \cdot b^3)(c^2)</math>  <math>3a^5b^4c^2</math></p>
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## Multiplying Monomials by Polynomials:

$$5(2x^2 + x + 4)$$

$$5(2x^2) + 5(x) + 5(4) = \boxed{10x^2 + 5x + 20}$$

<p>A) <math>2x^2y(3x - y)</math>  <math>2x^2y(3x) - 2x^2y(y)</math>  <math>6x^3y - 2x^2y^2</math></p>	<p>B) <math>4a(a^2b + 2b^2)</math>  <math>4a(a^2b) + 4a(2b^2)</math>  <math>4a^3b + 8ab^2</math></p>
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## Multiplying Binomial by Binomial:

$$(x+3)(x+2) \quad \text{FOIL}$$

$$\begin{array}{cccc} \text{F} & \text{O} & \text{I} & \text{L} \\ x \cdot x & 2 \cdot x & 3 \cdot x & 3 \cdot 2 \\ \hline & 0 & \text{I} & \text{L} \end{array}$$

$$x^2 + 2x + 3x + 6 = \boxed{x^2 + 5x + 6}$$

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

Box Method

	x	+4
x	$x^2$	$4x$
-6	$-6x$	$-24$

$$x^2 + 4x - 6x - 24$$

$$\boxed{x^2 - 2x - 24}$$

<p>A) <math>(x+2)(x-5)</math>  <math>(x+2)(x-5)</math>  <math>x^2 + 2x - 5x - 10</math>  <math>x^2 - 3x - 10</math></p>	<p>B) <math>(x+5)^2</math>  <math>(x+5)(x+5)</math>  <math>x^2 + 10x + 25</math></p>	<p>C) <math>(3a^2 - b)(a^2 - 2b)</math>  <math>3a^2 - b</math>  <math>a^2 \quad 3a^4 \quad -a^2b</math>  <math>-2b \quad -6a^2b \quad +2b^2</math>  <math>3a^4 - 7a^2b + 2b^2</math></p>
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