Name: Key

Algebra II

Period: _____

# Homework: Operations with Polynomials

**Directions:** Simplify. Final answers should be written in standard form.

1.) $(8x^3 - 6x^4 + 3) + (3x^3 - 4 + 8x^4)$

$8x^3 - 6x^4 + 3 + 3x^3 - 4 + 8x^4$

$8x^4 - 6x^4 + 8x^3 + 3x^3 - 4 + 3$

$\boxed{2x^4 + 11x^3 - 1}$

2.) $(2a^2b - 5b^3 + 4a^4b^2) - (7b^3 + 8a^4b^2 - 7a^2b)$

$2a^2b - 5b^3 + 4a^4b^2 - (7b^3 + 8a^4b^2 - 7a^2b)$

$-8a^4b^2 + 4a^4b^2 + 7a^2b + 2a^2b - 7b^3 - 5b^3$

$\boxed{-4a^4b^2 + 9a^2b - 12b^3}$

3.) $(5x + 1)(8 - 2x)$ FOIL

$40x - 10x^2 + 8 - 2x$

$-10x^2 + 40x - 2x + 8$

$\boxed{-10x^2 + 38x + 8}$

4.) $(a + b)(3a - b)(2a + 7b)$ FOIL, then BOX

$3a^2 - ab + 3ab - b^2$

$3a^2 + 2ab - b^2$

| | $2a$ | $7b$ |
|---|---|---|
| $3a^2$ | $6a^3$ | $21a^2b$ |
| $2ab$ | $4a^2b$ | $14ab^2$ |
| $-b^2$ | $-2ab^2$ | $-7b^3$ |

$\boxed{6a^3 + 25a^2b + 12ab^2 - 7b^3}$

5.) $(3w - 2)(w^2 - 2w + 10)$ BOX

| | $w^2$ | $-2w$ | $10$ |
|---|---|---|---|
| $3w$ | $3w^3$ | $-6w^2$ | $30w$ |
| $-2$ | $-2w^2$ | $4w$ | $-20$ |

$\boxed{3w^3 - 8w^2 + 34w - 20}$

6.) $(x^2 + 6x - 7)(x^2 - 9x - 4)$ BOX

| | $x^2$ | $6x$ | $-7$ |
|---|---|---|---|
| $x^2$ | $x^4$ | $6x^3$ | $-7x^2$ |
| $-9x$ | $-9x^3$ | $-54x^2$ | $63x$ |
| $-4$ | $-4x^2$ | $-24x$ | $28$ |

$\boxed{x^4 - 3x^3 - 65x^2 + 39x + 28}$

7.) $\frac{-42x^{10}y^5 + 12x^8y^3 - 6x^2y}{6x^2y}$

$\frac{-42x^{10}y^5}{6x^2y} + \frac{12x^8y^3}{6x^2y} - \frac{6x^2y}{6x^2y}$

$\boxed{-7x^8y^4 + 2x^6y^2 - 1}$

8.) $\frac{16a^4 - 40a^2 + 24a}{12a^3}$

$\frac{16a^4}{12a^3} - \frac{40a^2}{12a^3} + \frac{24a}{12a^3}$

$\frac{4a}{3} - \frac{10a^{-1}}{3} + 2a^{-2}$

$\boxed{\frac{4a}{3} - \frac{10}{3a} + \frac{2}{a^2}}$