POLYNOMIAL SUMMARY

Adding/Subtracting Algebraic Expressions (you can only add or subtract **like terms)**

1 – **add/subtract** the coefficients
2 – keep the same base
3 – keep the same exponent

EX: Adding: $8x^2 - 5x + 6 - 4x^2 - 8x + 3$

EX: Subtracting: $5c - (3c + 2) - 4c + 2$

EX: Subtract $3x^2 + 4x - 6$ from $x^2 - 2x - 3$

Multiplying Powers with the Same Base

1 – multiply the coefficients
2 – keep the same base
3 – add the exponents

EX: Multiplying: $(3xy^5)(-5x^3y^8)(x^8y^2)$

Finding a Power of a Power

1 – multiply the exponents.
(Numbers have exponents also)

EX: $\left(2x^9\right)^3$

Multiplying a Monomial by a Polynomial

1 – distribute the monomial through to everything in the parenthesis

EX: $3x\,(5x^2 - 3x + 2)$

Multiplying Binomials

1 – Binomials - Double Distribute – distribute each term in the first set of parenthesis to each term in the second set of parenthesis.

EX: $(8x - 2)(2x + 4)$

EX: $(2x - 4)^2$

Dividing Powers with the same Base

1 – divide the coefficients
2 – keep the same base
3 – subtract the exponents

EX: $\dfrac{18x^5y^7}{3x^3y^9}$

EX: $\dfrac{9x^3 - 18x^2 + 3x}{3x}$

Zero Power

1 – Anything to the zero power is 1

EX: x^0

EX: $3x^0$

EX: $(7x)^0$

Negative Exponents

1 – Change negative exponent positive by putting to the other side of fraction.

EX: $\dfrac{3x^{-3}y^6}{x^4y^{-5}}$

Name: _____ Algebra: Period ____

Topic: Practice with Exponents and Polynomials Date: _____

Directions: For Questions 1-10 simplify the algebraic expressions

1. $(2x^2+3x-7)-(7x^2+8x-3)+(8x^2+6x-4)$

2. $(-4x^8)(7x^3)(2x)$

3. $(5.2 \times 10^9)(6.4 \times 10^3)$

4. $(2x-4)^2$

5. $8x(4x^2 - 3x + 12)$

6. $3x^0 - (4x)^0$

7. $\dfrac{16x^3-32x^2+4x}{4x}$

8. $\dfrac{35x^{10}}{20x^{13}}$

9. $\dfrac{30x^{-3}y^{10}}{6x^3y^{-4}}$

10. $\dfrac{\left(2x^6\right)^2\left(4x^2\right)}{8x^3}$

11. Subtract $(6x^2 - 2x + 4)$ from $(3x^2 + 8x + 9)$

12. Subtract $(8x^2 - 3x + 2)$ from $(2x^2 + 12x - 13)$

13. Simplify:

a. $\left(3\sqrt{26}\right)\left(2\sqrt{2}\right)$

b. $\dfrac{3\sqrt{5}}{2\sqrt{8}}$

c. $3\sqrt{176} - 5\sqrt{99}$