Name: _____

Paper HW #13 Due 11/10/15

M110

Instructions: *Complete these problems for homework due on the date above. The problems should look very similar to those that were covered during our class meeting covering §7.2-7.3 & §8.2. As always show all work and please box your final answer.*

1. Use the commutative and associative properties of multiplication to move the factors of the monomials together. Use exponent rules to simplify.

a) $12xy^6(-5x^9y^4)$ b) $(-{}^5/_8\, x^6)(-{}^8/_{15}\, x^{13})$

2. Use the distributive property to create a sum of terms from the monomial multiplied by a polynomial. Use the commutative and associative properties of multiplication to move the factors of the terms together. Use the exponent rules to simplify each term.

a) $-14x^2(3xy - 2y^2)$ b) $3x^2y({}^1/_3\, x^2y^2 - 5xy + 4y)$

3. Simplify the following polynomials using the FOIL to help you remember the distributive property for two terms. Don't forget to combine like terms!

a) $(x + 4)(x + 7)$ b) $(x - 4)(x - 7)$

c) $(x + 7)(x - 4)$ d) $(x - 7)(x + 4)$

4. Use the "pattern" that we established in our class discussions to quickly find the values for each of the following.

a) $(x + 9)(x - 1)$ b) $(x - 3)(x - 6)$

c) $(x + 10)(x - 2)$ d) $(x - 5)(x - 8)$

5. Use FOIL to multiply:

a) $(x + 4y)(x + 3y)$ b) $(3x - 2)(x^2 + 4)$ c) $(2y - 7)(3y - 1)$

6. Using the same technique as multiplying numbers (treating degree terms like place values), multiply the following polynomials.

$(3x - 2)(4x^2 + 5x - 2)$

7. Use the pattern $(a \pm b)^2 = a^2 \pm 2ab + b^2$ to multiply each of the following.

a) $(x + 7)^2$ b) $(x - 4)^2$ c) $(2x + 9y)^2$

8. Using the pattern $(a + b)(a - b) = a^2 - b^2$ to find the following products.

a) $(x + 5)(x - 5)$ b) $(2x - 3)(2x + 3)$ c) $(x^2 + 4y)(x^2 - 4y)$

9. Find the **GCF** of the terms and factor it out to rewrite as a product of the GCF and a polynomial (that is a sum of terms resulting from the quotient of the original term and the GCF). *If a leading coefficient is negative factor a negative always!

a) $12x^2y - 28x^3y - 48x$

b) $36x^6y^2z - 45x^5yz^4 + 81x^3y^3z^2$

c) $-5x^2y + 15xy - 35y$

10. GCF's can also be binomials. Factor the **binomial GCF** from each of the following.

a) $3y(z - 2) - 7(z - 2)$

b) $(3x^2 + x)(3y - 5) + 2(3y - 5)$

11. Sometimes we will put concepts together. For instance we will use our factoring of a GCF and factoring of a binomial GCF to factor a polynomial with 4 terms. This strategy is called **factoring by grouping**. Factor each of the following by grouping.

a) $3x^3 + 3xy^2 + 2x^2y + 2y^3$

b) $5x^2 + 15xy - 2xy - 6y^2$