Mr. Ward Answer Key

Multiplying Polynomials

Multiplying Monomials:

Here is review from yesterday! What is a monomial? polynomial w/ 1 term

(Answer: A monomial is a polynomial with only 1 term.)

Example #1 Find the product of $(-3x^3y^2)(4xy^5)$

The easiest way to solve this type of problem is to put like things next to each other. So align the numbers next to each other, as well as the x's and the y's. It should look like this when you're done:

$(-3\cdot 4)(x^3\cdot x)(y^2\cdot y^5)$ = $-12x^4y^7$

Now individually multiply like terms together using properties you already know.

(Answer: $-12x^4y^7$)

Multiplying Polynomials Together

Example #1 Find the product of $4x(x^2 + 3)$.

For this example we're going to have to know how to distribute. When I say distribute I mean that you have to distribute the 4x to both the x^2 term and the 3 term. What that means is you have to multiply the 4x to BOTH terms.

Do this below and then check your answer against my key. (*Hint:* Draw arrows to help you when distributing.)

$4x^3 + 12x$

Example #2 Find the product of $(x-4)(3+5x - x^2)$.

This is where knowing how to distribute becomes very important! You need to make sure that you multiply both x and -4 against all 3 terms of the second polynomial.

Helpful Hint: Draw 3 arrows from the x to the 3 terms of the second polynomial. Then put another 3 arrows from the -4 to the 3 terms of the second polynomial. You should have 6 arrows in total. These represent the 6 different multiplications you will have to do.

Complete the problem below and be sure to show all of your work. When you're done with the entire multiplying process make sure you put your answer in Standard Form. Then come show me your answer!

$$3x + 5x^2 - x^3 - 12 - 20x + 4x^2$$

$$= \boxed{-x^3 + 9x^2 - 17x - 12}$$

<u>Assignment:</u> pg 497 #1-12, 19-24

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1. $14x^6$
2. $-20m^3n^5$
3. $3r^5s^5t^5$
4. $4a^6$
5. $21x^7y^3$
6. $30p^3q^9$

7. $4x^2 + 8x + 4$
8. $6a^3b + 9ab^4$
9. $6a^5b^2 + 2a^4b^3$
10. $-3x^3 + 12x^2 - 18x$
11. $10x^3y^4 - 5x^2y^2$
12. $5m^2n^3 \cdot (4m^2n^2 - mn^3)$

$20m^4n^5 - 5m^3n^6$

19. $x^3 - 2x^2 + 3x + 5x^2 - 10x + 15$

$= x^3 + 3x^2 - 7x + 15$

20. $3x^3 - 15x^2 + 6x + 4x^2 - 20x + 8$

$= 3x^3 - 11x^2 - 14x + 8$

21. $-6x^4 + 4x^2 - 10x + 12x^3 - 8x + 20$

$= -6x^4 + 12x^3 + 4x^2 - 18x + 20$

22. $-8x^4 + 4x^3 - 4x + 12x^3 - 6x^2 + 6$

$= -8x^4 + 16x^3 - 6x^2 - 4x + 6$

23. $x^3 + x^2 + x - 5x^2 - 5x - 5$

$= x^3 - 4x^2 - 4x - 5$

24. $(a+b)(a-b)(b-a)$

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

$(a^2 + b^2)(b-a)$

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

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