Foundations of Algebra **Name:**

Unit 7 - Polynomial Review

PART I: Classifying Polynomials

Fill in the table below using specific vocabulary (NOT NUMBERS!!).

	Degree	Number of terms	Leading coefficient
1. $5x - 4x^3 - 2$	CUBIC	trinomial	-4
2. $6x^3$	CUBIC	monomial	6
3. $10 + 4x^2$	Quadratic	Binomial	4
4. $10x^5 - 8x^2 + 3x$	5th degree	trinomial	10
5. -4	Constant	monomial	-4

PART II: Adding and Subtracting Polynomials

Simplify the following polynomials.

1. $(8y^2 - 2y + 4) + (5y^2 - 7y)$

$13y^2 - 9y + 4$

2. $(3k - 5k^3 + 9) + (8k^3 - 4k + 8)$

$3k^3 - k + 17$

2. $(3g - 5g^3 + 6g^2) - (12g^3 + 9g - 10)$

$3g - 5g^3 + 6g^2 - 12g^3 - 9g + 10$

$-17g^3 + 6g^2 - 6g + 10$

4. $(5b^2 - 6b - 9) - (-2b^2 + 8b - 1)$

$5b^2 - 6b - 9 + 2b^2 - 8b + 1$

$7b^2 - 14b - 8$

5. Can you find the error the student made below? Correct the mistake!

✗ $(x^3 - 8x + 2) + (3x^3 + 7x + 6) = x^3 - 8x + 2 + 3x^3 + 7x + 6$

$= (x^3 + 3x^3) - (8x + 7x) + (2 + 6)$

$= 4x^3 - 15x + 8$

$-8x + 7x = -1x$

Final polynomial: $4x^3 - x + 8$

PART III: Multiplying Polynomials

Simplify the following expressions.

6. $(x + 4)(x + 5)$

$x^2 + 9x + 20$

7. $(q + 4)(q - 7)$

$q^2 - 3q - 28$

8. $(2x - 3)(x - 1)$

$2x^2 - 5x + 3$

9. $(4 - x)(8 - 3x)$

$32 - 12x - 8x + 3x^2$

$3x^2 - 20x + 32$

10. $(d - 2)(d^2 - 5d)$

$d^3 - 5d^2 - 2d^2 + 10d$

$d^3 - 7d^2 + 10d$

11. $(2p + 4)(5p - 1)$

$10p^2 - 2p + 20p - 4$

$10p^2 + 18p - 4$

PART IV: Special Products.

Simplify the following expressions.

12. $(x + 7)^2$

$x^2 + 14x + 49$

13. $(2w - 3)^2$

$4w^2 - 12w + 9$

14. $(4q + 2)^2$

$16q^2 + 16q + 4$

15. $(n + 4)(n - 4)$

$n^2 - 16$

16. $(v - 7)(v + 7)$

$v^2 - 49$

17. $(5x + 2)(5x - 2)$

$25x^2 - 4$

For 18-19, use the BOX method! It might help ☺

18. $(x + 2)(x^2 + 5x + 1)$

$x^3 + 5x^2 + x + 2x^2 + 10x + 2$

$x^3 + 7x^2 + 11x + 2$

19. $(2t^2 - 9t - 5)(3t + 7)$

$6t^3 + 14t^2 - 27t^2 - 56t - 15t - 35$

$6t^3 - 13t^2 - 71t - 35$