


6. Algebra 1: Polynomial Operations		
Study Guide		MRS. WILSON
Part I: Multiple Choice: (Justify your answer to earn credit)		
1. Find the sum between $3x^2 - 4x - 3$ and $2x^2 + 5x - 1$ and state the degree. $3x^2 - 4x - 3$ $2x^2 + 5x - 1$ $5x^2 + x - 4$	2. The difference between $2x^2 + 4x$ and $-7x^2 - 4x$. $2x^2 + 4x$ $-7x^2 - 4x$ $9x^2 + 8x$	
3. Which expression is equivalent to $12m^3 - 4m^2 + 8m$? $4m(3m^2 - m + 2)$	4. What is the product of $(x + 7)(4x - 3)$. $4x \begin{array}{r} x+7 \\ 4x^2+28x \\ -3x-21 \\ \hline 4x^2+25x-21 \end{array}$	
5. What is the equivalent polynomial to the following factored expression: $(x - 4)^2$ $x^2 - 8x + 16$	6. A construction company is planning to pour concrete for a driveway. The length of the driveway is 10 feet longer than its width w . Write an expression for the area of the driveway. $w(w+10) = w^2 + 10w$	
7. Which of the following polynomials is prime (cannot be factored)? Show your solution. A. $x^2 - 10x - 24$ B. $2x^2 - 14x + 24$ C. $5x^2 - 14x + 8$ D. $3x^2 - 9x + 10$	8. Xantell is carpeting a rectangular room that has an area of $x^2 - 25$. If the width of the room is $x - 5$, what is the length of the room? $(x-5)(x+5) = x^2 - 25$ $L = x + 5$	
9. Factor the polynomial $(9x^3 - 18x^2) + (5x - 10)$ by grouping. $9x^2(x-2) + 5(x-2)$ $(9x^2 + 5)(x-2)$	10. Factor the following polynomial $x^3 + 8x^2 + 15x$ completely. $x(x^2 + 8x + 15)$ $x(x+5)(x+3)$	

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$$(7x^2 + 5)(x - 2)$$

Part II: Performance Task

Directions: Farmer Bob is planting a garden this spring. He wants to plant squash, pumpkins, corn, beans and potatoes. His plan for the field layout in feet is shown in the figure below. Use the figure and your knowledge of polynomials, perimeter and area to solve the following.



expression that represents the ^{Perimeter of} north side of the field.

$$P = y + 6x + xy - 1$$

2. Write a polynomial expression that represents the perimeter of the squash field. Simplify the polynomial expression that represents the perimeter of the squash field.

$$P_{\text{Squash}} = 2L + 2W$$

$$P = 2y + 2(4x)$$

$$P = 2y + 8x$$

3. Write a polynomial expression that represents the area of the pumpkin field. Simplify the polynomial expression that represents the area of the pumpkin field.

$$\begin{array}{r|rr} & 5x & +2 \\ 5x & 25x^2 & +10x \\ -2 & -10x & -4 \end{array}$$

$$A_{\text{pumpkin}} = 25x^2 - 4$$

4. Write and simplify the polynomial expression that represents the area of the squash field if $x = 2$ and $y = 5$. What unit would the area of Bob's squash field have?

$$A_{\text{SQUASH}} = LW$$

$$A = y \cdot 4x$$

$$A = 5 \cdot 4 \cdot 2$$

$$\begin{aligned} & \boxed{A = 4 \cdot 10} \\ & A = 5 \cdot 4 \cdot 2 \\ & = 40 \text{ SQUARE UNITS} \end{aligned}$$