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6. Algebra 1: Polynomial Operations

Assignment MRS. WILSON

Part I: Multiple Choice:(Justify your answer to earn credit)

1. Find the sum between $6x^2 - x + 4$ *and* $4x^2 - 5x - 3$ and state the degree.

$6x^2 - x + 4$

$10x^2 - 6x + 1$

2. The difference between $6x^2 + 6x$ and $-8x^2 - 5x$.

$+8x^2 + 5x$

$\boxed{14x^2 + 11x}$

3. Factor the expression by finding the GCF $15m^3 - 5m^2 + 8m$?

$m \,|\, 15m^3 - 5m^2 + 8m$

$15m^2 - 5m + 8$

$m(15m^2 - 5m + 8)$

4. What is the product of $(2x + 6)(x - 5)$.

	x	-5
$2x$	$2x^2$	$-10x$
$+6$	$6x$	-30

$2x^2 - 4x - 30$

5. What is the equivalent polynomial to the following factored expression:

$(x - 8)^2$

	x	-8
x	x^2	$-8x$
-8	$-8x$	$+64$

$x^2 - 16x + 64$

6. A construction company is planning to pour concrete for a driveway. The length of the driveway is 12 feet longer than its width *w*. Write an expression for the area of the driveway.

$A = w(w+12)$

$A = w^2 + 12w$

7. Which of the following polynomials is prime? (Cannot be factored)

Solve F and H

E. $x^2 - 13x + 36$ ✓

F. $2x^2 - 18x + 28$

$\boxed{\text{G. } 4x^2 + 9x + 16}$

H. $x^2 - 6x + 9$

G. 64, 4x, 9, 4x

E. 36, -9, -4, -13

8. Lowes is carpeting a rectangular room that has an area of $x^2 - 36ft^2$. If the width of the room is $x - 6$ ft, what is the length of the room?

-36, 6, -6, x, 0, x

$L = x + 6$

9. Factor the polynomial by grouping $6x^3 + 2x^2 - 9x - 3$.

$2x^2(3x+1) - 3(3x+1)$

$(2x^2 - 3)(3x+1)$

10. Factor the following polynomial completely

$x \,|\, x^3 + x^2 - 12x$

$x^2 + x - 12$

-12, 4, -3, x, 1, x

$x(x+4)(x-3)$

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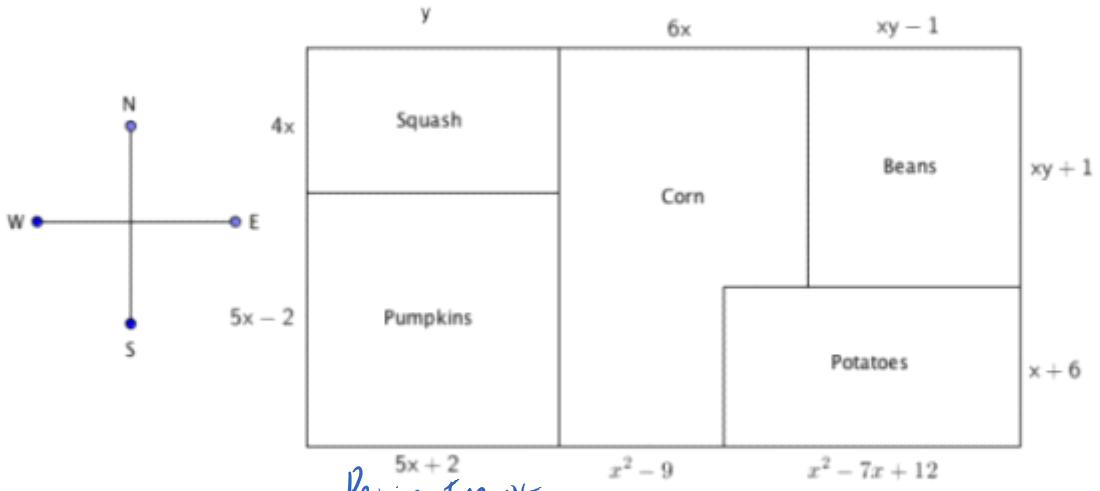
Part II: Performance Task

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.



1. Perimeter of

expression that represents the East side of the field.

$P_E = xy + 1 + x + 6 \qquad P = xy + x + 7$

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

$P_{potato} = 2L + 2W$
$= 2(x^2 - 7x + 12) + 2(x + 6)$
$= 2x^2 - 14x + 24 + 2x + 12$

$\boxed{P = 2x^2 - 12x + 36}$

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

$A_{SQUASH} = LW$
$A = (y)(4x) = \boxed{4xy}$

4. Write and simplify the polynomial expression that represents the area of the squash field if x = 4 and y = 8. What unit would the area of Bob's squash field have?

$A = 4xy = 4(4)(8) = 128$ sq. units