Polynomials Study Guide Name _____

Simplify each expression by adding or subtracting.

1. $(3x^2 - 8x + 2) + (4x^2 - 5x - 10)$

2. $(8x^2 + 2x - 7) - (3x^2 - 5x - 2)$

Simplify each expression by multiplying and combining like terms.

3. $3x^3(5x^2 - 2x + 8)$

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

5. $(x + 4)(x - 2)$

6. $(4x - 1)(x + 3)$

7. $(x + 9)(x - 9)$

8. $(x - 4)^2$

Factor Completely

9. $x^2 + 7x + 6$

10. $x^2 + 7x - 30$

11. $x^2 - 3x - 28$

12. $x^2 - 14x + 49$

13. $x^2 - 36$

14. $4x^3 - 12x^2 - 5x + 15$

15. $x^2 - 9x - 36$

16. $4x^2 - 15x - 25$

17. $96x^3 - 84x^2 + 112x - 98$

18. $3n^2 - 2n - 5$

19. $5x^2 - 18x + 9$

20. $15x^2 - 27x - 6$

Word Problems:

21. The length of a rectangle is x + 5. The width of the rectangle is 3x -2. Write a simplified expression to represent the perimeter of the rectangle.

22. The length of a rectangle is x + 7. The width of the rectangle is 2x - 5. Write a simplified expression to represent the area of the rectangle.

23. Emma and Kyle compare their earnings. Emma's earnings can be modeled by the equation $E(x) = 18.50x + 25$, where x is the number of hours worked in a week. Kyle's earnings are modeled by the equation $K(x) = 15.75x + 45$, where x is the number of hours worked in a week. Write a function that models their difference in earnings, $C(x)$, if they each work the same number of hours in a week?

24. Find the perimeter of an equilateral triangle if a side has length of 5x - 2.

25. The area of a rectangle is $5x^2 - 7x + 2$. What are the dimensions of the rectangle?