Solve each problem using a system of equations.

1. Emily has 180 M&Ms, some plain and some peanut. If there are 32 more plain M&Ms than peanut M&Ms, how many peanut M&Ms does she have?

2. The crib for Mrs. Matthew’s baby is a rectangle. This rectangle has a perimeter of 126 inches. Its length is 5 in more than its width. Find the dimensions of the baby’s crib.

3. Chris and Paul sold tickets to the NCAA Regional Baseball Tournament. Chair back seats were $5 each while seats in Aggie Alley cost $2 each. If only 210 people attended and they paid a total of $660 for tickets, how many people bought chair back seats?

Solve the inequality and graph it on the number line.

4. $4(x + 1) - 2(x - 1) < 3 - x$
Graph the inequalities below and shade the solution.

5. \( y > -3x + 1 \)  

6. \( y \leq 2x + 7 \)

7. Mr. Salgado needs to get his car repaired, but cannot spend more than $225 for repairs. His mechanic told him that he part needed to fix his car would cost $78 and the labor would be an additional $35 per hour. How many hours can the mechanic work and stay within Mr. Salgado’s budget?

Simplify the following polynomials:

8. \((x^2 + 6x - 5) + (-x^2 - 3x - 1) = \) ______________

9. \((a^2 - 3a - 5) - (-a^2 - 7a + 4) = \) ______________
Spring Final Exam Review

Simplify the following problems.

10. \((2x^4)(5x^3)\)

11. \((4x^7)(2x^4) - (6x^6)(5x^5)\)

12. \((x + 2)(x - 3)\)

13. \((3x - 2)(2x + 3)\)

14. \(4t(2t^2 - t - 5)\)

15. \(\frac{32a^2bc^3}{20abc}\)

16. \((-4c^3)^3\)

17. \((4x^2y)^2(-3xy^2)^3\)

18. Find the volume of this solid.

![Diagram of a rectangular prism with dimensions a x 3a x 2a]
FACTOR COMPLETELY. Find the solutions.

19. $18x - 12y + 36$

20. $64x^2 - 25$

21. $x^2 + 20x + 36$

22. $r^2 + 7r - 18$

23. $3p^2 + 7p - 6$

24. $3p^2 + 7p - 6$

Solve using the Quadratic Formula. Round your answers to the nearest tenth.

25. $6x^2 - 5x - 2 = 0$

26. $x^2 + 8x + 3 = 0$
Write the equation for the parabola: \( y = x^2 \)

27. Shifts up 4 units.  

28. Shifts down 2 units and is reflected.

29. Tiger Woods hits a golf ball into the air. The equation that describes the path of the ball is \( h = 55t - 5t^2 \). Answer the following questions using the information given.

A. How high is the ball after 2 seconds?

B. When will it first reach 140 meters?

C. When will it hit the ground?

30. The area of a rectangular room is given by the equation \( w^2 - 7w = 18 \) where \( w \) is the width of the room. Find the width of the room.

31. The area of a rectangular piece of cardboard is represented by the equation \( L(3L - 7) = 20 \) where \( L \) is the length of the room. Find the length of the room.
32. At which points does the graph of \( f(x) = x^2 + 2x - 48 \) intersect the \( x \)-axis?

33. For the function \( y = 4x^2 + 3x - 1 \), what is the value of \( y \) when \( x = -3 \)?

34. What is the vertex of \( y = 4x^2 + 3x - 1 \)?

Linear Transformations.

35. Given the equation \( y = 5x - 3 \), what would be the slope of a parallel line?

36. Write the equation of the line \( y = 2x - 3 \) that has been shifted:

   A. Up 3
   
   B. Down 1

37. Describe the change in the graph \( y = -5x \) when the equation is changed to \( y = -5x - 4 \).
Write the equation of a line given the following information.

38. The slope is 4 and crosses through the point (-2, 11)

39. 2 points (3, -1) and (-2, 9).

40. In a random survey of 40 algebra 1 students at A & M consolidated HS, 30 said they loved their math class. Using this information, what is the best prediction of the number of students who love their Algebra 1 class out of 340 students?

41. Two lines have the equations $2x - y = 1$
    
    $3x = y - 6$

    At what point do they intersect?
42. SOLVE: \[ 2(x + 3) + 3(x - 5) = 8(x - 6) \]

Graph each of the linear equations.

43. \( y = -2x + 5 \)

44. \( y = 4 \)

45. \( x = 6 \)