Algebra Summer Packet

Directions: This packet will be taken up the first day of school. Be sure to complete every problem in the packet and show all of your work or credit will not be given.Circle your final answer. Use any resources that are available to you such as help from parents or other students, notes from previous classes, online resources, but do not use AI. **IMPORTANT-** This packet will be collected and taken as a grade when you return to school and a test will be given the first week over the material on the packet.

Simplify using order of operations. (In all problems in this packet √ is the symbol used for square root/radical sign)

1. $3 + 4 \times 2 - 1$
2. $(5 + 3)^2 \div 4$
3. $18 - 3 \times (2 + 1)^2$
4. $[4 \times (6 - 2)] \div 8 + 5$
5. $(3^2 + 4^2) - \sqrt{25}$

Evaluate each expression for the given values.

6. $2x + 3y$, $x = 4$ and $y = -2$
7. $x^2 - 5x + 6$, $x = 3$
8. $3a - b^2$, $a = 5$ and $b = -1$
9. $(m + n) / (m - n)$, $m = 7$ and $n = 3$
10. $|2x - 10|$, $x = -3$

Solve each equation.

11. $x + 13 = 20$

12. $y - 7 = -3$

13. $4n = 28$

14. $\frac{z}{5} = -6$

15. $-3m = 15$

16. $2x + 5 = 17$

17. $3y - 4 = 11$

18. $(\frac{n}{2}) + 8 = 3$

19. $5 - 4m = -19$

20. $\frac{2}{3}x - 1 = 5$

Find the slope using both points. Slope Formula: $\frac{(y_2 - y)}{(x_2 - x_1)}$

21. (2,3) and (6,7)

22. (-1,4) and (3,-2)

23. (0,5) and (4,5)

24. (-3,1) and (-3,6)

Write the equation of the line in slope intercept form (y = mx + b) using the information that is given.

25. m = 2, b = -3

26. m = $-\frac{1}{2}$, b = 4

27. Passes through (0,-1), slope is 3

28. Passes through (2,5), slope is -2

Simplify the following polynomials by adding or subtracting (29-30), multiplying (31-34), or factoring (35-38).

29. $(3x^2 + 2x - 1) + (x^2 - 5x + 4)$

30. $(5x^2 - 3xx + 7) - (2x^2 + x - 3)$

31. $3x(2x^2 - 4x + 1)$

32. $(x - 5)(x + 3)$

33. $(2x + 3)(x - 4)$

34. $(x + 6)^2$

35. $x^2 + 7x + 12$

36. $x^2 - 9x + 20$

37. $x^2 - 16$

38. $2x^2 + 10x$