2024 Algebra 2 Summer Packet

Name: _____   Score: _____   _____ / 35

To get full credit, <u>you must show work</u> for each of the problems that are not multiple choice. This is all review from Algebra 1. If you do not remember how to solve a problem, it is your responsibility to do some research and figure out how. These are all concepts that will be built upon in Algebra 2.

Each student should be prepared to have the summer packet completed and ready to be checked during the first full day of school. Over the course of the first few weeks of the beginning of the school year, the packet will be reviewed, and a final packet assessment will be given as the first test grade of the new school year.

Below are some helpful resources for you to refer to:
http://www.purplemath.com/modules/index.htm
https://www.khanacademy.org/math/algebra I
https://www.mathway.com/Algebra
http://www.sosmath.com/
https://photomath.net/en/
http://www.livemath.com/
https://sites.google.com/a/epsne.org/mr-smith/how-to-study-math

MULTIPLE CHOICE: Write the letter of the correct choice in the blank.

_____ 1. Which of the following inequalities should be graphed using a solid line?
   a. $2x - 4y > 4$ c. $5x + 2y \geq 10$
   b. $x + y < 8$ d. $7x - 9y \neq 4$

_____ 2. Which of the following is correct when $-x \geq 4$ is solved for x ?
   a. $x \geq -4$ c. $x > 4$
   b. $x < 4$ d. $x \leq -4$

_____ 3. When two conjugates are multiplied, the product is the difference of two squares.
   a. true   b. false

_____ 4. Which of the following quadratic trinomials is written in standard form?
   a. $3x^2 + x + 5$ c. $6x + 2x^2 + 32$
   b. $x^2 + 12 + 5x$ d. $7 + 4x + x^2$

_____ 5. What is the constant in the quadratic trinomial $5x^2 + x - 6$?
   a. 5   c. 6
   b. -6 d. 1

_____ 6. In the radical expression $\sqrt{2x^3}$, what is the index?
   a. 0   c. 2
   b. 1   d. 3

_____ 7. Which of the following is a like radical with $4\sqrt{8}$?

a. $8\sqrt{4}$ c. $2\sqrt[3]{8}$

b. $4\sqrt{2}$ d. $12\sqrt{8}$

_____ 8. Which of the following is the root of $\sqrt[3]{-27}$?

a. 3   c. -3

b. Irrational   d. Not real

_____ 9. Which of the following is the conjugate of $5 - \sqrt{2x}$?

a. $2x + \sqrt{5}$ c. $\sqrt{2x} - 5$

b. $5 + \sqrt{2x}$ d. $\sqrt{5} - 2x$

_____ 10. In the radical expression $2\sqrt[4]{5x^2}$, what is the radicand?

a. $5x^2$ c. 2

b. 4   d. 25

SHORT ANSWER: Write each answer in the blanks provided.

_____ 11. Slope-Intercept Form
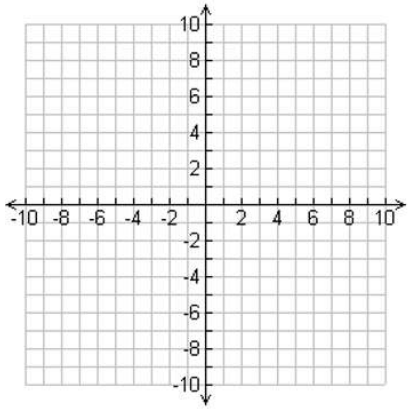
_____ 12. Standard Form for Quadratic Equations.

_____ 13. Quadratic Formula

INEQUALITY SOLVING: Solve each inequality and write the answer in the blank provided.

_____ 14. $2(x - 5) \geq 4(x + 3)$

GRAPHING INEQUALITIES: Graph the solutions to the inequality.

15. $3x - 2y > -2$

SOLUTION VERIFICATION: If the ordered pair is a solution to the system, write *solution* in the blank. If it is not a solution, write *not a solution.*

_____ 16. $5x - y = 12$ $\qquad\qquad\qquad$ $(-3, 12)$
$\qquad\qquad\qquad\qquad\qquad$ $x + 2y = 3$

SOLVING SYSTEMS OF EQUATIONS: Solve the system using either substitution or elimination. Show all your work and write the answer in the blank.

_____ 17. $3x + 2y = 4$
$\qquad\qquad\qquad\qquad\qquad$ $x - 4y = 6$

MULTIPLYING POLYNOMIALS: Multiply the polynomial below and write the answer in the blank.

_____ 18. $(x - 2)(3x^2 + 2x - 1)$

DIVIDING POLYNOMIALS: Divide the polynomials below and write your answer in the blank.

_____ 19. $\dfrac{14x^4 + 4x^3 - 2x^2}{2x}$

_____ 20. $(x^2 + 11x + 30) \div (x + 5)$

FACTORING: Factor each polynomial below and write your answer in the blank.
(Methods for factoring: GCF, Difference of Squares, and AC Methods)

_____ 21. $4ab^2 - 24a^2b$

_____ 22. $4x^2 - 11x - 3$

_____ 23. $9x^2 - 4y^2$

EQUATION SOLVING: Solve the equation below by factoring.

_____ 24. $x^2 - 5x + 6 = 0$

RADICALS: Simplify each radical completely and write the answer in the blank. Be sure to show your work.

_____ 25. $2\sqrt{12} - 6\sqrt{3} + 4\sqrt{27}$

_____ 26. $\left(4 + \sqrt{y}\right)^2$

_____ 27. $\dfrac{2}{\sqrt{x}+6}$

RADICAL EQUATIONS: Solve the radical equation below and write your answer in the blank.

_____ 28. $\sqrt{2x} - 2 = 4$

QUADRATIC EQUATIONS: Solve each quadratic equation.

_____ 29. $(x-1)^2 = 25$

_____ 30. $x^2 - 2x - 28 = 0$

WORD PROBLEMS: Solve each word problem. Be sure to write your answer in terms of the question.

31. A video store charges a one-time membership fee of $12.00 plus $1.50 per video rental. How many videos can Stewart rent if he spends $21?

32. Bicycle city makes custom bicycles. They charge $160 plus $80 for each day that it takes to build the bicycle. If you have $480 to spend on your new bicycle, how many days can you take it to Bicycle City to build the bike?

33. Darel went to the mall and spent $41. He bought several t-shirts that each cost $12 and he bought 1 pair of socks for $5. How many t-shirts did Darel buy?

34. Janet weighs 20 pounds more than Anna. If the sum of their weight is 250 pounds, how much does each girl weigh.

35. The school lunch prices are changing next year. The cost of a hot lunch will increase by $0.45 from the current price. If next year's price is $2.60, what did a hot lunch cost this year?