

# Algebra 2 Honors Summer Assignment

## **Directions:**

Print and complete this packet of Algebra 1 review problems. Show ALL work on separate sheets of paper. Your work must be neat, clearly labeled and organized.

If you have any questions about this assignment, please contact Mrs. Garrod at [wgarrod@springfieldschools.com](mailto:wgarrod@springfieldschools.com) You will have a test on the material in this assignment within the first two weeks of school.

**Due Date: September 8, 2020**

**Please bring this assignment with you to the first day of class.**

**Name:** \_\_\_\_\_

**Directions: Please show all work on a separate piece of paper. Keep your work neat, organized, and clearly labeled.**

**Simplify:**

1.  $(-16) + (-42) + (-25) + (-19)$

2.  $-15 - (-4)(6) + (-44) \div (-11)$

**Evaluate if  $a = 18$ ,  $b = 3$ ,  $c = 4$ , and  $d = 5$ .**

3.  $a - b \cdot c + d$

4.  $a - (b \cdot c + d)$

5.  $a - b \cdot (c + d)$

**Simplify:**

6.  $6x + 7y + 8x - 2y$

7.  $3m(n - 2m) - 2n(2m - 3n)$

8.  $(2a - 5) - (4a + 6) + (7 - 2a)$

9.  $-\frac{10}{7} \div \left(-\frac{5}{9}\right)$

10.  $-3\left(-\frac{7}{4}a + \frac{1}{6}\right) + \frac{5}{2}\left(3 - \frac{a}{2}\right)$

**Solve:**

11.  $5a + 2a - 6 = 4a - 5$

12.  $x + 5 = \frac{1}{3}(6x - 5)$

13.  $\frac{8 - 5r}{6} = 3$

14. Solve for  $k$ .  $\frac{8a^2b^3}{3k} = 4a$

15. Solve for  $m$ .  $\sqrt{2m} = a + 3$

16. A year-end clearance sale is advertised as 30% off all prices as marked. What is the sale price of the sofa that is marked as \$925?
17. If a calculator costs \$12.90 after a 25% discount, what is the original price of the calculator?
18. You have four scores of 82, 78, 90, and 70. What do you need to get on the fifth test in order to obtain an average score of 81 for the five tests?
19. Evaluate  $|4 - x|$ , if  $x = -2$ .
20. Evaluate  $|a| - |2b|$ , if  $a = -5$  and  $b = 1$

**Write an expression or equation for each of the following:**

21. The product of six less than a number, and five more than the same number.
22. The number  $c$  equals the cube of the sum of 2 and three times  $m$ .
23. Twelve decreased by the square of  $a$  is equal to  $b$ .

**Simplify:**

24.  $(2x^2 - 5x + 7) - (3x^3 + x^2 + 2)$

25.  $(4x^2 - 3x + 7) + (2x^2 + 4x)$

26.  $y^3 \cdot y^4 \cdot y$

27.  $(-4a^2x) - (5a^3x^4)$

28.  $\frac{-16a^3b^2x^4y}{-48a^4bxy^3}$

29.  $(-3x^3y)^2(4x)^3$

30. Find  $p$  if  $p = m^3 - 3mn - n^2$  and  $m = -1, n = 2$

**Find each product:**

31.  $(a - 4)(a^2 + 5a - 7)$

32.  $(2x + 9y)(3x - y)$

**Factor by any means possible:**

33.  $5a^2b^2c - 15abc^2$

34.  $x^2 - 7x + 6$

35.  $b^2 + 5b - 6$

36.  $2r^2 - 3r - 20$

37.  $16m^2 - 1$

**Solve These Quadratics:**

38.  $(x - 8)(x - 4) = 0$

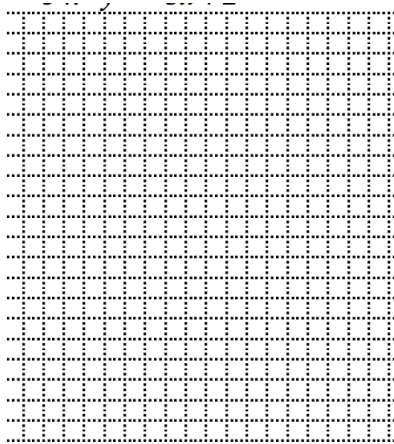
39.  $x^2 - 8x - 20 = 0$

40.  $9k^2 - 12k - 1 = 0$

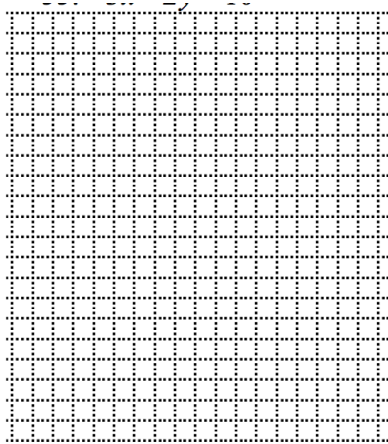
41. Coordinate Plane. Find the slope of a line that passes through the points  $(-6,4)$  and  $(3,5)$ .

**Graph the linear equations:**

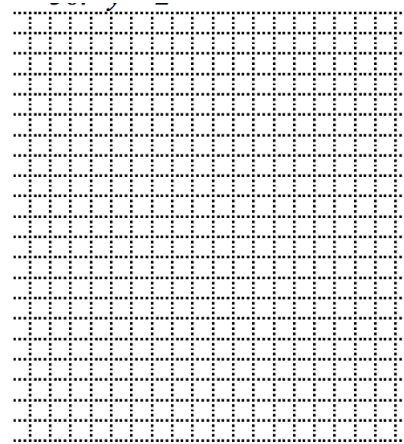
42.  $y = -3x + 2$



43.  $3x - 2y = 10$



44.  $y = 2$



45. Determine if these lines are *parallel*, *perpendicular*, or *neither*.

$y = 2x - 6$  and  $3x - 6y = 4$

46. Determine if these lines are *parallel*, *perpendicular*, or *neither*.

$4y - 10x = 3$  and  $5x = 7 + 2y$

**Simplify. Rationalize the denominator when necessary.**

47.  $\sqrt{144}$

48.  $\sqrt{24}$

49.  $\sqrt{108}$

50.  $4\sqrt{27} + 8\sqrt{48}$

51. *Coordinate Plane.* The points  $(4, 2)$  and  $(-1, y)$  are  $\sqrt{74}$  units apart.  
What is the value of  $y$ ?

*Solve the system of equations:*

52. 
$$\begin{array}{rcl} 2m & + & n = 1 \\ m & - & n = 8 \end{array}$$

53. Westville has a population of 7200, which is decreasing at a rate of 80 people per year. Troy has a population of 5000 and is gaining 120 people per year. In how many years will the populations of Westville and Troy be the same?

## Formulas

Use the following formulas in the coordinate plane when given two points  $(x_1, y_1)$  and  $(x_2, y_2)$ .

Distance Formula:  $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

Midpoint Formula:  $(x, y) = \left( \frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$

Slope Formula:  $m = \frac{y_2 - y_1}{x_2 - x_1}$

Use the following formula when solving an equation in the form  $ax^2 + bx + c = 0$ .

Quadratic Formula:  $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$