Algebra 2 Honors
Summer Assignment

Name: _____
Date: _____ Period: _____

Robbinsville School District
Algebra 2 HONORS Summer Assignment

Welcome to Algebra 2 Honors! On the following pages you will find your summer assignment for the upcoming 2019-2020 school year. The summer assignment reviews material that you have learned in Algebra 1 Accelerated. The packet is to be completed and is **due on the first day of school**. It will be collected for a homework grade. Be prepared for an assessment on this material during the first week of school to determine your readiness for this honors level class.

If you need assistance, use your Algebra 1 notes and/or on-line videos to review the material. There are videos provided. These videos may be accessed on any web-connected device with any web browser. Each video shares the identical title to the corresponding section in the summer packet. Additionally QR codes are available within the packet, when scanned using a smartphone or tablet these codes will link directly to the corresponding video. The QR code below provides a link for the url: www.showme.com/RHS-Math.

WE STRONGLY RECOMMEND WAITING UNTIL THE LATTER PART OF THE SUMMER TO COMPLETE THIS PACKET AS THAT WILL HELP THE STUDENTS BEST REFRESH THEIR SKILLS PRIOR TO SCHOOL BEGINNING IN SEPTEMBER!!!

Section 1: Factoring quadratic expressions with $a = 1$. Factor each completely.

1) $x^2 - 3x - 18$

2) $x^2 + 6x - 40$

3) $x^2 - 15x + 56$

4) $x^2 - 3x - 54$

Section 2: Factoring quadratic expressions with $a > 1$. Factor each completely.

5) $3x^2 + 4x + 4$

6) $3x^2 - 10x - 25$

7) $10v^2 + 11v - 8$

8) $21n^2 - 70n + 49$

9) $3x^2 - 7x - 10$

10) $4x^2 - 27x + 18$

11) $6m^2 + 25mn + 11n^2$

12) $-2h^2 + 4h + 70$

Section 3: Factoring quadratic expressions special cases - Difference of Two Squares (DOTS) and Perfect Square Trinomials. Factor each completely.

13) $9x^2 - 16$

14) $25x^2 - 1$

15) $36x^2 - 4$

16) $36x^2 - 12x + 1$

17) $p^2 + 24p + 144$

18) $9p^2 - 42p + 49$

Section 4: Factoring quadratic expressions with a Greatest Common Factor and $a = 1$. Factor each completely.

19) $3x^2 + 9x + 6$

20) $2x^2 - 16x + 14$

Section 5: Factoring quadratic expressions with a Greatest Common Factor and $a > 1$. Factor each completely.

21) $6x^2 + 32x - 70$

22) $30m^2 + 66m - 216$

23) $-10x^3 + 44x^2 - 16x$

24) $15x^4 - 63x^3 - 162x^2$

Section 6: Factoring by Grouping (4 terms). Factor each completely.

25) $7h^4 - 4h^3 + 28h^2 - 16h$

26) $9a^3 - 12a^2 + 18a - 24$

27) $15t^3 + 2t^2 - 45t - 6$

28) $36v^3 - 126v^2 + 48v - 168$

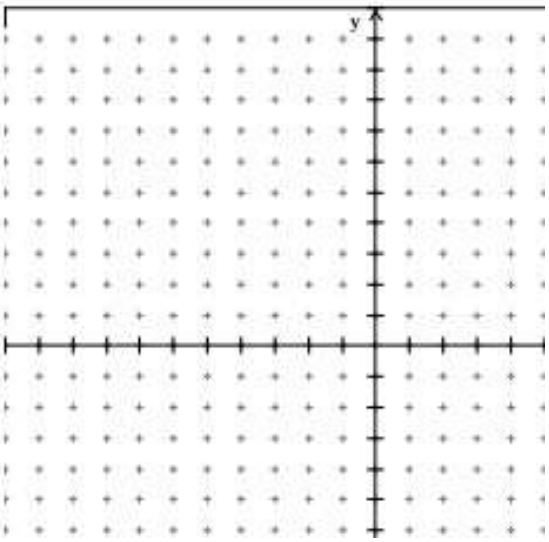
Section 6: Determine the slope, x intercept and y intercept given a Slope-Intercept Form eq

29) Equation: $y = -\frac{1}{2}x - 2$

Slope: _____

y-int: _____

x-int: _____

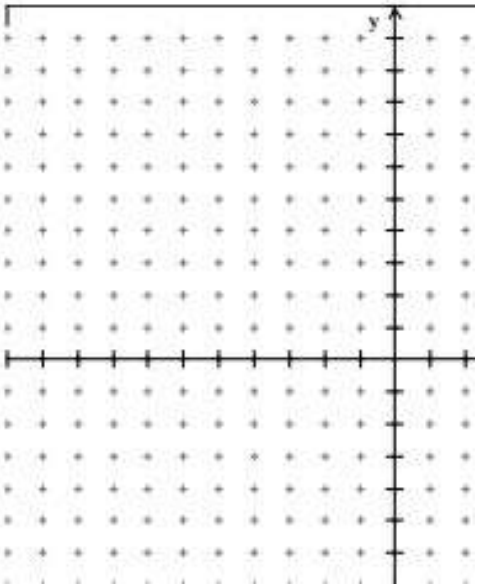


30) Equation: $y = 3x - 4$

Slope: _____

y-int: _____

x-int: _____

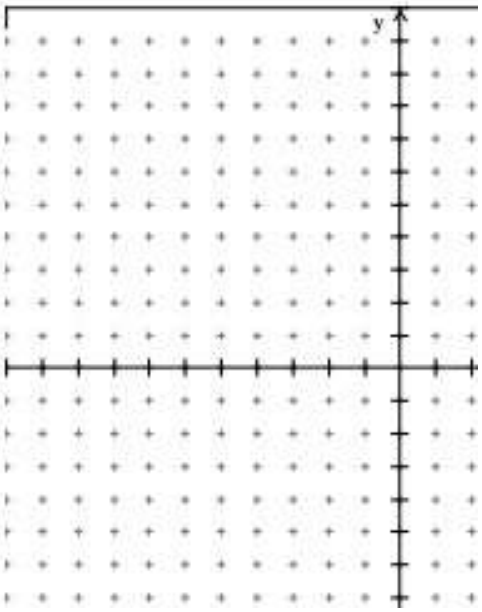


31) Equation: $y = 0$

Slope: _____

y-int: _____

x-int: _____



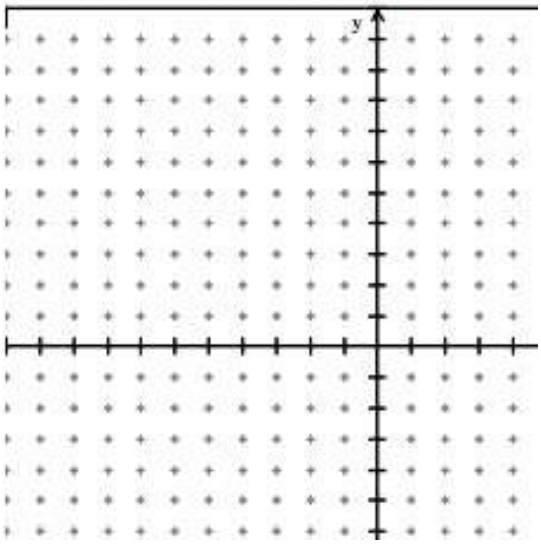
Section 7: Determine the Slope-Intercept Form equation, slope, x intercept and y intercept

32) Given: $(-1, 4)$ and $(0,1)$

Equation: _____

Slope: _____

y-int: _____



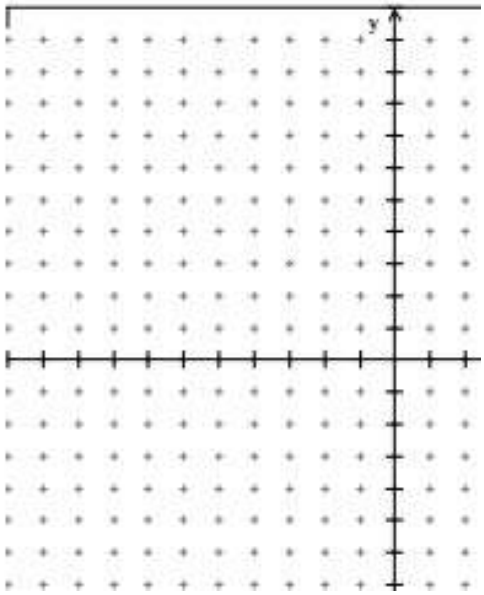
33) Given: (-2,3) and (4,-4)

Equation: _____

Slope: _____

y-int: _____

x-int: _____



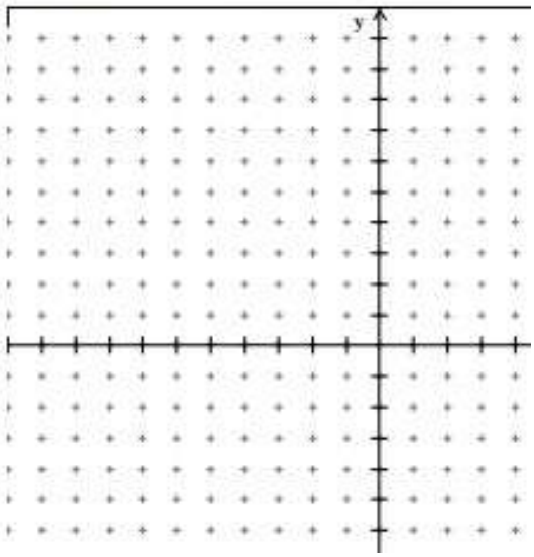
Section 8: Determine the slope, x intercept and y intercept given a Standard Form equatio

34) Equation: $4x - y = 1$

Slope: _____

y-int: _____

x-int: _____



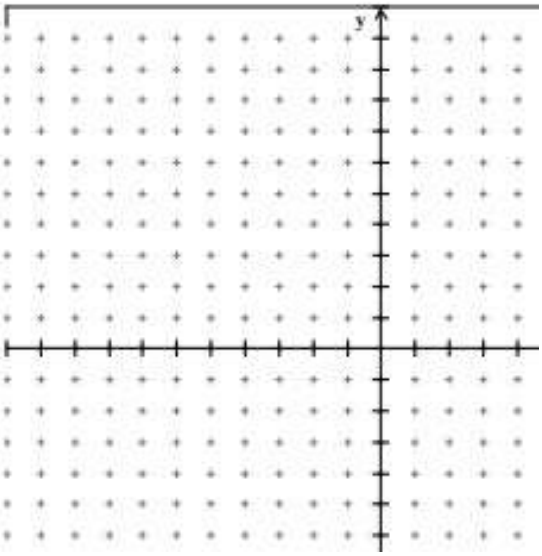
Section 8: Determine the slope, x intercept and y intercept given a Standard Form equatio

35) Equation: $x = 0$

Slope: _____

y-int: _____

x-int: _____



Section 9: Solve the equation for the variable.

36) $-90 = 5(5 + x) + 35$

37) $\frac{1}{2}(4b + 1) = 7 - \frac{1}{4}(6b - 2)$

38) $12 = -3(4 - 6n) - (6 + 3n)$

39) $55 = 5(-4p + 7) - 4(5p - 5)$

40) $t - 2(3 - 2t) = 2t + 9$

41) $4 - 2(x - 6) = 6x + 8$

For 42-43 write all solutions as decimals. Round to the nearest hundredth as necessary.

42) $-5.2(7.5n + 5.7) - 7.1(7.8 - 3.9n) = -25.077$

43) $5.9(k + 2.56) = -5.4k - 5.9(1 - 4.24k)$

For 44-45, express all solutions as fraction form.

44) $\frac{13}{7}\left(x - \frac{5}{3}\right) + \frac{9}{5}\left(\frac{1}{2}x - 2\right) = x + \frac{25}{6} + x + \frac{7}{6}$

45) $\frac{10}{3}\left(-\frac{2}{3}r + 1\right) + 2\left(-\frac{9}{4}r - \frac{16}{7}\right) = -\frac{1003}{126}$

Section 10: Simplify each rational expression using division. State any excluded values.

46) $\dfrac{\frac{g+2}{3g-1}}{\frac{g^2+2g}{6g+2}}$

47) $\frac{a+1}{4a+4} \div \frac{1}{a+5}$

48) $\frac{40r}{r+4} \div \frac{1}{r+4}$

49) $\dfrac{\frac{5}{y} - \frac{1}{y}}{\frac{x^2}{5}}$

50) $\dfrac{\frac{x+5}{2}}{\frac{y-3}{x+5}}$

51) $\dfrac{m^2 - 20m + 100}{3} \div (10 - m)$

Section 11: Solve the inequality for the variable. Graph the solution on a number line.

52) $-47 > -5 - 6(1 + 2x)$

53) $-5x + 4(5 - 2x) \leq 3x + 36$

Section 12: Solve each system of linear equations using Algebra (Elimination or Substitution). Answers should be expressed as fractions where appropriate.

54) $\begin{cases} 3x + 5y = 29 \\ 6x + 3y = 9 \end{cases}$

55) $\begin{cases} x - 7y = -28 \\ 9x + 4y = 16 \end{cases}$

56) $\begin{cases} 6x + 12y = -5 \\ -4x - 9y = 4 \end{cases}$

57) $\begin{cases} -14x - 2y = -6 \\ 7x + y = 3 \end{cases}$

Section 13: Determine which type of function (linear, quadratic, exponential) best models the data in each table and/or word problem.

58. The number of people attending a school's first five basketball games is shown in the table below.

Game	1	2	3	4
Attendance	248	307	366	425

59. The table shows the depreciation of a used car over time.

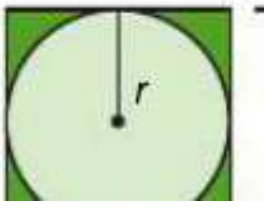
Years	Value ($
0	12,575
1	11,065
2	9750
3	8520

60. What type function best models the data in the table.

x	y
0	0
1	3
2	11.3
3	24.7

Section 14: Word Problems and Applications

61. A designer wants to make a circular fountain inside a square of grass as shown. What is a rule for the area A of the grass as a function of r?



62. A farmer grows corn, tomatoes and watermelon on a 320-acre farm. This year, the framer wants to plant twice as many acres of tomatoes as acres of watermelon. The farmer also wants to plant 40 more acres of corn than of tomatoes. How many acres of each crop should the farmer plant?

63. A baseball is thrown into the air with an upward velocity of 30 ft/s. Its height h, in feet, after t seconds is given by the function $h = -16t^2 + 30t + 6$.

a. How long will it take the ball to reach its maximum height?

b. What is the ball's maximum height?

c. What is the range of the function?

64. For safety at the Philadelphia Zoo, the recommended height of a zebra fence is 5 ft. Because of uneven ground surfaces, the actual height of the fence can vary from this recommendation by up to 3 inches. Write and solve an absolute value equation that can be used to find the maximum and minimum heights of the fence. Then, find the maximum and minimum heights of the fence.

65. A Fed-Ex box is being used to package and ship a smaller box of fragile glassware. The length of each edge of the Fed-Ex box is s. The box of glassware has edges of length $\frac{1}{3}$s. If the void must be filled with packing foam to protect the glassware,

a. Write a model for the Volume V of packing foam needed to fill the void.

b. If the length of the glassware box is 6 inches, find the volume of packing foam needed to protect the glassware.