

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

Sterling High School  
Summer Review Packet  
Algebra 2 Honors

The completion of this review packet is a requirement for all students enrolled in Algebra 2 Honors at Sterling High School. It is a review of the essential mathematical skills necessary for success in Algebra 2 Honors and subsequent math courses.

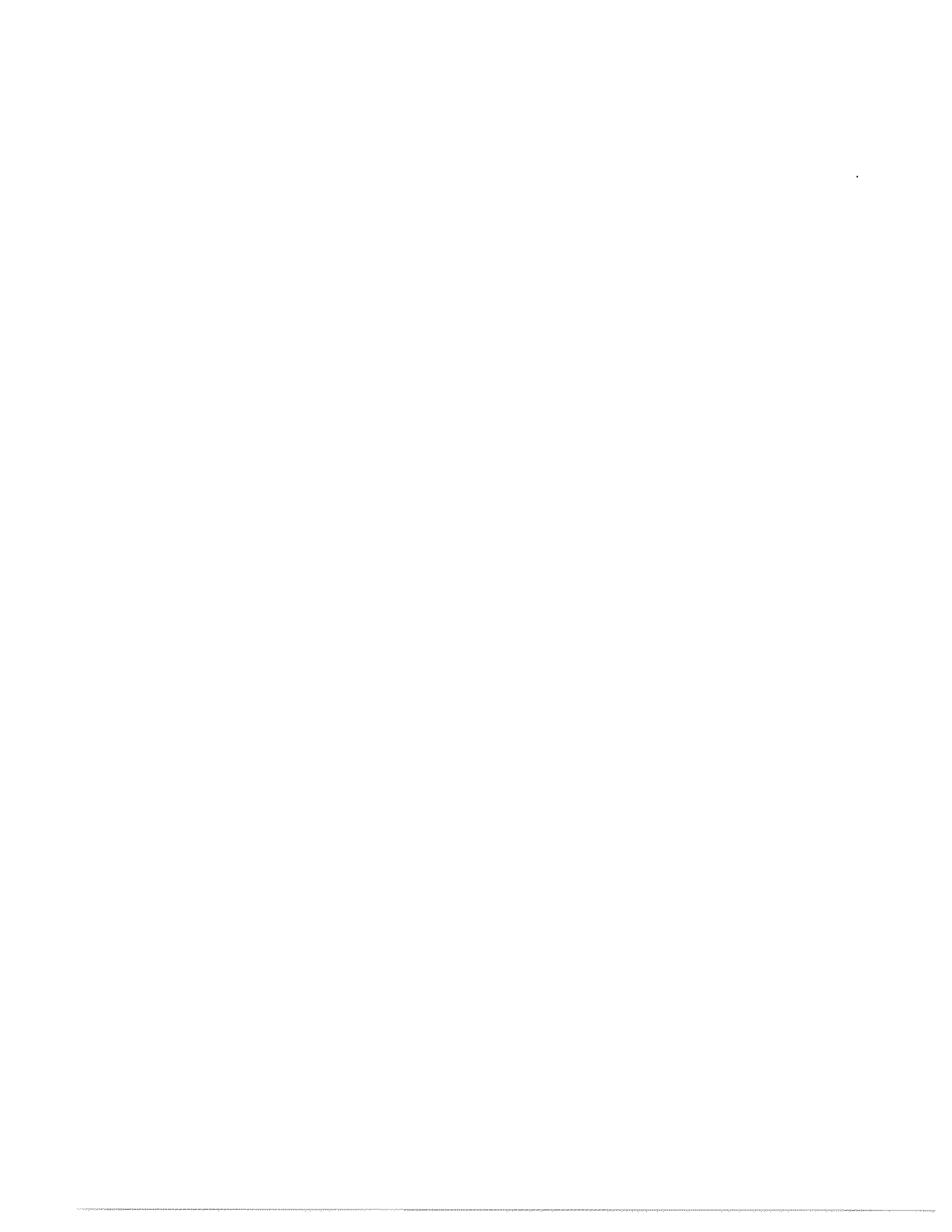
This packet is a graded assignment, and it must be completed to receive full credit. Please show all work for each problem. The teacher will quickly review the material in the packet and an assessment will be given after the topics have been reviewed.

S1 classes: Submit to teacher 1<sup>st</sup> day of class

S2 classes: Bring to Room 305 by 9/7/2023

Have a wonderful summer and GO KNIGHTS!





Show all work for each problem to receive credit for answers.

Factor the following:

1.  $x^2 + 6x - 16$

2.  $2x^2 - 7x - 15$

3.  $4x^2 - 25$

4.  $16x^2 - 24x + 9$

Solve the following equations:

5.  $5r^2 - 44r + 120 = -30 + 11r$

6.  $6b^2 - 13b + 3 = -3$

7.  $9m^2 + 48m = -64$

Solve the following equations and inequalities:

8.  $3(x - 2) + 5 = 11$

9.  $4x - 5 = 20$

10.  $\frac{1}{3}(x - 7) + 2 = 6$

11.  $\frac{x}{4} - 3 = -2$

12.  $|2x - 5| = 7$

13.  $3|x + 2| - 8 \leq 7$

14.  $3 - |y| > 1.6$

**Solve and graph the solution to the following inequalities:**

15.  $-3x + 5 \leq 20$

16.  $3x + 7 > -4x - 12$

17.  $0.02x - 0.05 \geq -0.03x$

18.  $-5(x + 7) - 6 < 29$

**Simplifying and evaluating expressions:**

19.  $2(x - 5)^2 - 8x + 3$

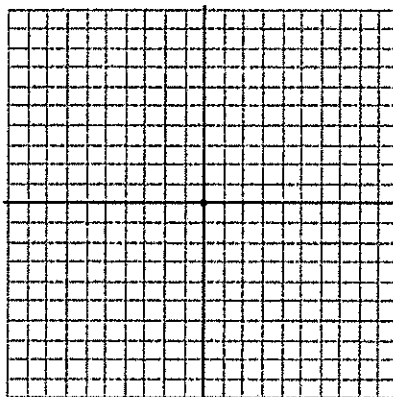
20.  $5|3 - 5| + 5|4 - 7|$

21.  $5 + 2 \cdot 4^2 + |-3 + (-2)| + \frac{\sqrt{9+16}-(-3)^2}{2}$

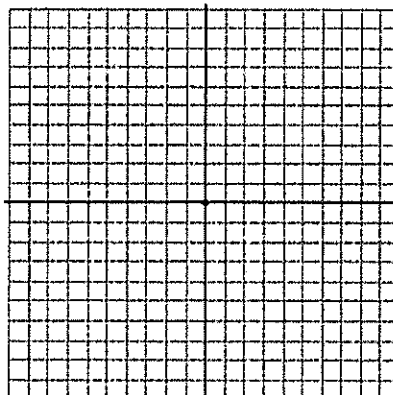
22.  $11^2 - |2(-15)| - \sqrt{\frac{x^2}{2} + 7 \cdot 8 + 3}$  for  $x=4$

Graph the following linear equations or linear inequalities on the coordinate plane provided:

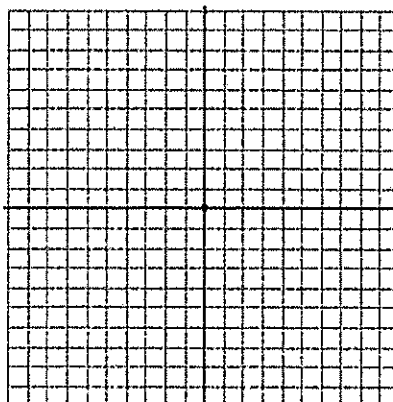
23.  $y = \frac{2}{3}x - 4$



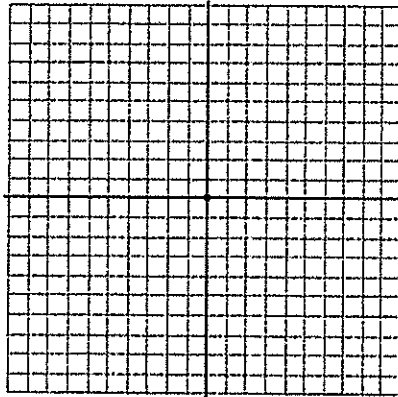
24.  $x = -2$



25.  $3x + 4y = -12$



26.  $x - 2y < 8$



Write an equation in slope intercept form with the following descriptions

27. *through*  $(3, 1)$  and  $(-7, 5)$

28. *slope*  $= \frac{-3}{4}$  *through*  $(\frac{1}{5}, -2)$

29. *slope*  $= -0.8$  and *y - intercept*  $= -\frac{1}{6}$

Simplify the following radicals

30.  $\sqrt{50}$

31.  $\sqrt{\frac{100}{25}}$

32.  $\sqrt{\frac{5}{20}}$

33.  $\sqrt{\frac{2}{7}}$

### Requirements for a polygon

34. How many sides must a polygon have?
35. What is the formula for the number of diagonals of a polygon?
36. What is the formula to find the total sum of the interior angles of a polygon?

### Special triangles

37. How are the sides related in a 30-60-90 triangle?
38. How are the sides related in a 45-45-90 triangle?
39. In order to find the lengths of the sides of a right triangle, what formula would be used?

### Add, subtract, divide, and multiply the following expressions

40.  $|-21 - |-12||$

41.  $(-3)^2 - 8$

42.  $-\frac{3}{5} - \frac{7}{8}$

43.  $1.35 - 2.85$

### Solve the following systems of equations using any method.

44. 
$$\begin{cases} 3x + 4y = 12 \\ -2x - 3y = -6 \end{cases}$$

45. 
$$\begin{cases} y = -2 \\ 3x + 4y = 7 \end{cases}$$

Multiply the following Polynomials:

$$46. (m^2 + 6n - 4)(2n - 4)$$

$$47. (3x - 4)(4x + 3)$$

Simplify the following:

$$48. y^5 \cdot y^8 \cdot y^3$$

$$49. (5x^3y)^2$$

$$50. \frac{4a^3b^8}{2ab^{-10}}$$

$$51. \frac{60x^5 - 18x^3 + 24x^2 + 30x}{6x}$$

$$52. \frac{-15x^2(2x)^4}{-3(xy)^5}$$

$$53. (39878x^{78})^0$$

$$54. \left( \frac{3x^5y^0}{6x^{-2}y^{-3}} \right)^2$$

$$55. \frac{(a+b)^{-2}}{(a+b)^{-5}}$$

$$56. \sqrt{x^4} + \sqrt{9x^2}$$

$$57. \sqrt[4]{16} + \sqrt[3]{125} + \sqrt{64}$$



Solve the radical equations:

58.  $\sqrt{x^2 - 17} = 18$

59.  $\sqrt[3]{2x + 3} + 5 = 4$

Solve the following rational expressions by factoring and reducing.

60.  $-\frac{36x^3}{42x^2}$

61.  $\frac{45}{10a-10}$

62.  $\frac{x-4}{3x^2-12x}$

63.  $\frac{v-5}{v^2-10v+25}$

64.  $\frac{m^2-5m-14}{m^2-4m+4}$

65.  $\frac{4n-4}{6n-20}$

Answer Sheet

Name \_\_\_\_\_

1. \_\_\_\_\_

20. \_\_\_\_\_

2. \_\_\_\_\_

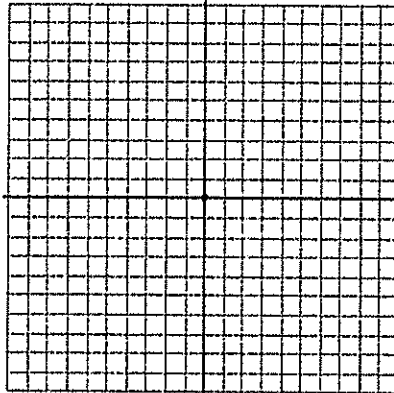
21. \_\_\_\_\_

3. \_\_\_\_\_

22. \_\_\_\_\_

4. \_\_\_\_\_

23.



5. \_\_\_\_\_

6. \_\_\_\_\_

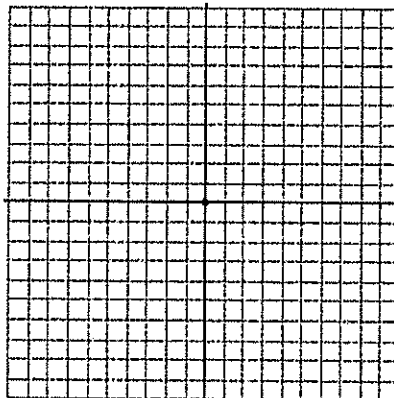
7. \_\_\_\_\_

8. \_\_\_\_\_

9. \_\_\_\_\_

10. \_\_\_\_\_

24.



11. \_\_\_\_\_

12. \_\_\_\_\_

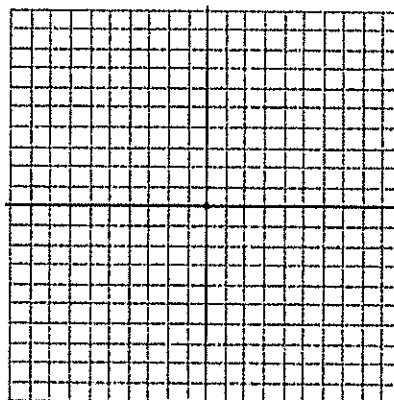
13. \_\_\_\_\_

14. \_\_\_\_\_

15. \_\_\_\_\_

16. \_\_\_\_\_

25.

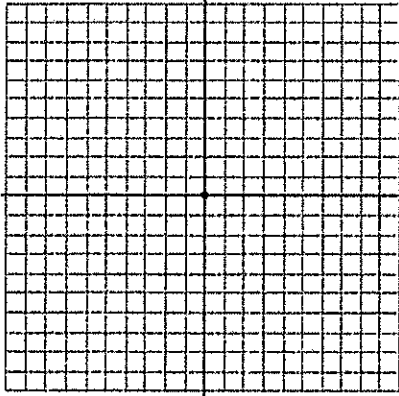


17. \_\_\_\_\_

18. \_\_\_\_\_

19. \_\_\_\_\_

26.



41. \_\_\_\_\_

61. \_\_\_\_\_

42. \_\_\_\_\_

62. \_\_\_\_\_

43. \_\_\_\_\_

63. \_\_\_\_\_

44. \_\_\_\_\_

64. \_\_\_\_\_

45. \_\_\_\_\_

65. \_\_\_\_\_

46. \_\_\_\_\_

27. \_\_\_\_\_

47. \_\_\_\_\_

28. \_\_\_\_\_

48. \_\_\_\_\_

29. \_\_\_\_\_

49. \_\_\_\_\_

30. \_\_\_\_\_

50. \_\_\_\_\_

31. \_\_\_\_\_

51. \_\_\_\_\_

32. \_\_\_\_\_

52. \_\_\_\_\_

33. \_\_\_\_\_

53. \_\_\_\_\_

34. \_\_\_\_\_

54. \_\_\_\_\_

35. \_\_\_\_\_

55. \_\_\_\_\_

36. \_\_\_\_\_

56. \_\_\_\_\_

37. \_\_\_\_\_

57. \_\_\_\_\_

38. \_\_\_\_\_

58. \_\_\_\_\_

39. \_\_\_\_\_

59. \_\_\_\_\_

40. \_\_\_\_\_

60. \_\_\_\_\_

