

Walton High School Math Prerequisite Packet
Enhanced Honors Geometry A & B – Fall 2024

All of this information will be needed sometime during the upcoming year. These topics should have been covered in previous courses (not necessarily last year). You are responsible for all of this material and will be assessed on mastery. **You are expected to bring this completed packet with you to class on the first day of school.**

ALL WORK MUST BE SHOWN ON SEPARATE PAPER. NO CALCULATORS ALLOWED.

I. Simplifying expressions with exponents:

1. $a^2 \cdot a^3 \cdot a^8$	2. $((-3)^2)^2$	3. $4g^2h \cdot (-2g)^3$	4. $(-m^2)(m^3)$
5. $(-15ap^4)(\frac{-1}{3}ap^3)$	6. $\frac{(r^{-4}k^2)^2}{(5k^2)^2}$	7. $\frac{-a^4b^8}{a^4b^7}$	8. $\frac{r^{-5}s^{-2}}{(r^2s^5)^{-1}}$
9. $\frac{a^b}{a^{a-b}}$	10. $2^{7x+6} \cdot 2^{3x-4}$	11. $\frac{(a^{x+2})^2}{(a^{x-3})^2}$	12. $(\frac{m^0x^2y^{-3}z^5}{x^5y^{-2}z})^{-1}$

II. Simplify the following polynomial expressions.

13. $-2(9x - 1) - (5 + x)$	14. $(4x - 1)(x + 3)$
15. $(5x - 1)^2$	16. $3x^2(x - 4)(x^3 - 5x^2 + 2)$

III. Factor the following polynomial expressions. If not possible, write "Prime"

17. $18x^2 - 27x - 5$	18. $6a^2 - 7a + 18$	19. $-4y^2 + 20y - 21$
20. $75x^2 - 12$	21. $x^4 - 16$	22. $4ax + 35by - 10ay - 14bx$
23. $3x^3 - 27x$	24. $\frac{1}{3}b^2 + 2b + 3$	

IV. Simplify the following radical expressions:

25. $\sqrt{147}$	26. $2\sqrt{14} \cdot \sqrt{21}$	27. $\frac{\sqrt{60}}{\sqrt{3}}$	28. $\sqrt{\frac{11}{32}}$
29. $\frac{1}{6+\sqrt{3}}$	30. $2\sqrt{50} - 3\sqrt{32}$	31. $b\sqrt{40b^2} + 3\sqrt{90b^4}$	32. $\sqrt{a^5b^3cd^8}$

V. Solving equations:

33. $7 + 2(x + 1) = 2x + 9$	34. $\frac{3}{8} - \frac{x}{4} = \frac{1}{2}x - \frac{3}{4}$
35. $5^{2x-1} = 5^{7x-8}$	36. $9^{2x+1} = 27^{x-1}$

Solve the quadratic equation by factoring.

37. $x^2 + 2x - 24 = 0$

38. $9x^2 - 25 = 0$

Solve the quadratic equation by using square roots.

39. $2x^2 - 1 = 13$

40. $(x - 3)^2 - 5 = 19$

Solve the quadratic equation by completing the square.

41. $x^2 - 6x + 4 = 0$

42. $2x^2 = 8x + 16$

Solve the quadratic equation by using the quadratic formula.

43. $x^2 + 6x + 2 = 0$

44. $3x^2 - 5x + 12 = 0$

VI. Evaluate the following functions for the given x-value.

45. $f(x) = -x^3 + x^2$; $x = -2$

46. $g(x) = \frac{x-3}{2x+1}$; $x = -1$

VII. Solve the inequalities. Write your answer using interval notation.

47. $8x + 1 < 12$

48. $-\frac{1}{2}x - 3 < 19$

49. $3x + 11 \leq 13$ or $2x \leq 5x - 12$

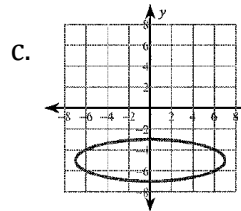
50. $-3 < 5x - 1 \leq 9$

VIII. Functions:

51. Identify the domain and range of the following. Is the relation a function?

a. $\{(-1,3),(5,3),(2,6),(8,1)\}$

b. $\{(0,3),(4,1),(-2,4),(4,5),(-10,2)\}$



52. Characteristics of Graphs: For each function below: sketch the graph, state x and y intercepts, and state domain and range

a) $2y - x + 5 = 0$

b) $7x = 15$

c) $y = 3^x + 5$

d) $y = 2(x - 4)^2 + 3$

53. For the function: $y = -3(x + 5)^2 - 4$

a.) State the y-intercept

b) What transformations take place from the parent graph of $y = x^2$

c) State the end-behavior of the graph of this function

IX: Writing Equations of lines using POINT SLOPE FORM $y - y_1 = m(x - x_1)$:

54. Write the equation of a line passing through (6,5) with slope $1/2$.
55. Write the equation of a line passing through (-1,3) and (7,2).
56. Write the equation of the line that is perpendicular to the graph of $2x - 3y = -3$, and passes through (-3, 0).

X. Characteristics of Polynomials:

For each polynomial state the degree, leading coefficient, and write the polynomial in standard form.

57. $x^4 - 3x^5 + 7x^2$

58. $4 - x^7 + 3x^2 - 10x$

XI. Systems of Equations

59. Graph to solve the system.

$$y = \frac{1}{2}x + 3$$

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

Solve each system algebraically:

60. $12x + 3y = 16$
 $-36x + 12 = 9y$

61. $5x + 6y = 4$
 $8 + 7x = 10y$

62. $4x - y = 6$
 $y = 3x - 12$

XII. Modeling:

63. Carla and Ken are both electricians. Carla charges \$15 for a service call, plus \$15 per hour. Ken charges \$35 for a service call, plus \$10 per hour. If they work the same number of hours and are paid the same amount of money, how many hours did they work?

64. The length of a rectangular lot is 7 yards less than twice its width. If the length was increased by 11 yards and the width decreased by 6 yards, the area would be decreased by 40 square yards. Find the original dimensions of the lot.

65. Eva has earned 453 points prior to the 200-point semester test in her math class. To get an A for the semester, she must earn at least 630 points. What is the minimum number of points she can score on the test and still get an A?

66. The perimeter of a football field is 1040 feet. The length of the field is 120 feet less than 3 times the width. What are the dimensions of the field?