Name: _____ **Period:** _____ **Date:** _____ **ID: A**

RBC Summer Math Packet - Honors Algebra II & Trig - This WILL NOT be collected however you will be tested on its contents in September.

What is the solution of the equation?

1. $5(10x-10) = -5(-4x+4)$
2. $-6p+7 = 3(2p-3)-4(-10+4p)$
3. What equation do you get when you solve $z-m=z+bx$ for x?
4. What equation do you get when you solve $ky-bf=\frac{fy}{m}$ for y?
5. Car A travels 180 miles in 7 hours. Car B travels 350 miles in 4 hours. Car C travels 584 miles in 15 hours. Which car has the fastest average speed?

What is the solution of the proportion?

6. $\frac{x-8}{5}=\frac{2}{4}$
7. $\frac{w+14}{4w+6}=\frac{3}{4}$
8. $\frac{10}{8}=\frac{25}{x}$
9. A van travels 220 miles on 10 gallons of gas. Find how many gallons the van needs to travel 550 miles.
10. A building casts a shadow 10 ft long. A statue in front of the building casts a shadow 2.5 ft long. If the statue is 15 ft tall, how tall is the building?
11. What is the total cost of a $56.53 meal at a restaurant after including a 17% tip?
12. 145% of what number is 870?
13. 125% of what number is 264?
14. You deposited $8500 dollars in a savings account that earns a simple interest rate. What interest rate do you need to be paid, if you require $10093.75 after 5 years.

What are the solutions of the inequality? Graph the solutions.

15. $-5x \geq -10$
16. $-\frac{2}{5}x-9<\frac{9}{10}$
17. $6(k-11)>12$
18. $12+10w \geq 8(w+12)$

19. $\frac{x}{9} > 9$

What is the slope of the line that passes through the pair of points?

20. (1, 7), (10, 1)
21. (–5.5, 6.1), (–2.5, 3.1)
22. $(-\frac{5}{3}, -1), (-2, \frac{9}{2})$

Does the equation represent a direct variation? If so, find the constant of variation.

23. $2x - 4y = 0$
24. $2x^2 + 4y = 0$
25. Suppose y varies directly with x, and $y = \frac{19}{3}$ when $x = \frac{4}{5}$. What direct variation equation relates x and y? What is the value of y when $x = -\frac{7}{6}$?

Find the x- and y-intercept of the line.

26. $-4x + 2y = 24$
27. Write $y = \frac{1}{6}x + 5$ in standard form using integers.

Write an equation for the line that is parallel to the given line and passes through the given point.

28. $y = 5x + 8$; (2, 16)
29. $y = \frac{3}{5}x - 8$; (–15, –23)

Tell whether the lines for each pair of equations are *parallel*, *perpendicular*, or *neither*.

30. $y = -\frac{1}{6}x - 5$
    $24x - 4y = 12$
31. $y = \frac{5}{3}x + 3$
    $20x + 12y = 12$
32. $y = -\frac{1}{2}x - 12$
    $-6x - 12y = 21$

Write the equation of a line that is perpendicular to the given line and that passes through the given point.

33. $x + 3y = 16$; (–3, –4)

34. $y = \frac{7}{8}x - \frac{3}{2}$; (–4, 2)

35. Mike and Kim invest $12,000 in equipment to print yearbooks for schools. Each yearbook costs $5 to print and sells for $15. How many yearbooks must they sell before their business breaks even?

Solve the system of equations.

36. $5x + 4y = -2$
$x - 4y = 14$

37. $-12x - y = 6$
$17x + y = 4$

38. $x + 3y = 13$
$5x + 6y = 38$

39. $3x = -18 + 4y$
$16y = 58 + 5x$

Graph the inequality.

40. $y > -5x + 3$

What is the graph of the system?

41. $y \leq x + 4$
$2x + y \leq -4$

42. $y \leq -x - 1$
$y \geq 2x + 4$

43. What is the value of $4x^{-3}y^3$ for $x = 3$ and $y = -1$?

What is each expression written using each base only once?

44. $(-5)^{-5} \cdot (-5)^6$

45. $7^{10} \cdot 7^{-4} \cdot 7^7$

What is the simplified form of each expression?

46. $2b^{-1} \cdot 5b^{10}$

47. $x^8 \cdot 2y^{10} \cdot 5x^5$

Simplify the expression.

48. $(5m^{\frac{4}{3}} \cdot 5n^{\frac{1}{4}})(m^{\frac{1}{3}} \cdot 2n^{\frac{1}{8}})$

____ 49. $256^{\frac{1}{4}}$

a. 4 b. 256^4 c. 256 d. 1024

What is the simplified form of the expression?

50. $(p^6)^2$

51. $(t^{\frac{5}{3}})^{\frac{1}{5}}$

52. $m^7\left(m^2\right)^{-9}$

53. $k^3\left(k^{\frac{7}{5}}\right)^{-5}$

What is the simplified form of each expression?

54. $(3h^3)^4$

55. $(3x^{\frac{7}{2}})^6(x^2)^6$

56. $(2a^5b^5)^3(3a^5b^3)^3$

What is the simplified form of each expression?

57. $\dfrac{q^{\frac{33}{4}}}{q^8}$

58. $\dfrac{c^9d^{-7}}{c^{14}d^{-10}}$

What is the simplified form of the expression?

59. $\left(\dfrac{4k^4}{7c^3}\right)^3$

60. $\left(\frac{m^3}{4c^5}\right)^{-4}$

Simplify the sum.

61. $(2u^3 + 6u^2 + 3) + (2u^3 - 7u + 6)$

Simplify the difference.

62. $(4w^2 - 7w - 6) - (8w^2 + 2w - 3)$

Find the GCF of the terms of the polynomial.

63. $48x^6 + 6x^2 - 26x^3$

Factor the polynomial.

64. $25w^6 + 35w^3$

Simplify the product using FOIL.

65. $(3x + 4)(2x - 6)$

What is a simpler form of the expression?

66. $(2n^2 + 5n + 3)(4n - 5)$

67. $(4k + 5)(3k^2 - 4k - 4)$

What is a simpler form of each product?

68. $(7m + 5)^2$

What is a simpler form of the following expressions?

69. $(4p - 8)(4p + 8)$

What is the factored form of the following expressions?

70. $d^2 + 16d + 63$

71. $d^2 - 19d + 90$

72. $d^2 - 14d + 45$

73. $x^2 - 6xy - 40y^2$

74. $d^2 + 2d - 48$

75. $8x^2 + 18x + 9$

76. $10x^2 + 31x + 15$

77. $6g^2 + 5g - 6$

78. $24g^2 - gh - 10h^2$

79. $80y^2 - 210y - 245$

80. $3x^2 + 8x - 16$

81. $d^2 - 20d + 100$

82. $d^2 + 18d + 81$

83. $s^4 - 16$

84. $100b^2 - 81$

85. $s^2 - 81$

86. $56k^3 - 84k^2 + 70k - 105$

87. $50x^2 - 8$

88. A refrigerator has a volume given by the trinomial $y^3 + 5y^2 - 14y$. What are the possible dimensions of the refrigerator? Use factoring.

Graph the function. Identify the vertex and axis of symmetry.

89. $f(x) = -2x^2 + 2x - 1$

Solve the equation using square roots.

____ 90. $2x^2 - 98 = 0$

a. $-7, 7$
c. $-\sqrt{7}, \sqrt{7}$
b. $-49, 49$
d. no real number solutions

____ 91. $4x^2 + 65 = 81$

a. $-\sqrt{2}, \sqrt{2}$
c. $-2, 2$
b. $-4, 4$
d. no real number solutions

Solve the equation using the Zero-Product Property.

____ 92. $(x - 2)(x + 7) = 0$

a. $2, -7$
c. $-1, 1$
b. $2, 7$
d. $-2, -7$

93. $(2x - 4)(2x - 1) = 0$

94. $-8n(8n-8)=0$

What are the solutions of the equation?

95. $z^2-12z+36=0$

96. $3z^2+3z-6=0$

97. $c^2-10c=0$

98. $x^2+3x=18$

99. $20x^2-11x-4=0$

Use the quadratic formula to solve the equation. If necessary, round to the nearest hundredth.

100. $x^2+10=-7x$

101. $x^2-2=-3x$

Simplify the radical expression.

102. $\sqrt{49a^8}$

103. $\sqrt{12h^4}$

104. $\sqrt{20h^6k^4}$

105. $2\sqrt{10}\cdot 3\sqrt{12}$

106. $\sqrt{14q}\cdot 2\sqrt{4q}$

Simplify the radical expression.

107. $\sqrt{\dfrac{10}{121}}$

Simplify the radical expression by rationalizing the denominator.

108. $\dfrac{3}{\sqrt{11}}$

109. $\dfrac{9\sqrt{25}}{\sqrt{50}}$

Simplify the expression.

110. $4\sqrt{6}+5\sqrt{6}$

111. $5\sqrt{2}+\sqrt{18}$

112. $(9-\sqrt{7})(9+\sqrt{7})$

113. $\sqrt{6}\left(\sqrt{33}+7\right)$

114. $\dfrac{3}{\sqrt{7}-\sqrt{2}}$

Solve the equation. Check your solution.

115. $4=\sqrt{h}-6$

116. $\sqrt{a+6}=11$

Solve the equation.

117. $\sqrt{6x+8}=\sqrt{7x-6}$

118. $-9\sqrt{7x-3}=-\sqrt{8x+6}$

What is the domain of the function?

119. $y=2\sqrt{4x+6}$.

Simplify the rational expression. State any excluded values.

120. $\dfrac{3x-6}{x-2}$

121. $\dfrac{-14x^3}{x^3-3x^4}$

122. $\dfrac{x^2-x-6}{x+2}$

123. $\dfrac{x^2-36}{6-x}$

124. $\dfrac{x^2-36}{42x-7x^2}$

Solve the proportion.

125. $\frac{2}{x} = \frac{\sqrt{3}+1}{5}$