ALGEBRA II HONORS NAME _____
REVIEW PACKET DATE _____ Per. _____

REVIEW MATERIAL FOR Chapter 1(1.1-1.9), Chapter 2(2.1-2.5) and Chapter 3(3.1-3.5, 3.7)

This is all material that you should have mastered in Algebra I. You should review the material over the summer and expect a test within the first three weeks of school. If you are having difficulties with any of these topics then you will need to attend Miss Newbury's or Mrs. Schumacher's after school help sessions on Wednesdays.

Directions: Please do all work on a separate sheet of paper. All answers should be in fractional form and in lowest terms. It is strongly recommend that these problems be completed without the aid of a calculator as your first test will be a **non-calculator** test.

I. ORDER OF OPERATIONS

Simplify the expression on each side of _____. Make a true statement by replacing the _____ with the symbol $=$ or $\neq$.

1. $\dfrac{23+19}{7\cdot 2}$ ____ $54\div 9-3$

2. $3\left[36\div(3+6)\right]$ _____ $30-\left[(36\div 3)+6\right]$

3. $1+\dfrac{31-4}{7+2}$ _____ $\dfrac{8\cdot 12-16}{108\div 3+4}$

4. $\left[(7\cdot 3-4)3\right]3+6$ _____ $7\cdot 3\cdot 3-4\cdot 3\cdot 3+6$

5. $\dfrac{[9-(4\cdot 2)]+(3\cdot 8)}{[(28\div 4)+3]-5}$ _____ $[3+(3\cdot 3)-(33\div 3)]\cdot\dfrac{14-4}{7-2}$

6. $\left|5-8\right|-\left|\dfrac{1}{2}-2\right|$ _____ $-3\left|-\dfrac{3}{4}+\dfrac{5}{7}\right|+\left|\dfrac{35}{38}+\dfrac{5}{14}\right|$

Use order of operations to simplify each expression

7. $6^3\div[5^2-3^2-(-2)^2]$

8. $(6^2-3\cdot 2^2+1)\div[(0+(-5)^2]$

9. $6(3^2-2^2)\div 3+4\div(-4)$

10. $7(3^2-1)+2^4\cdot 3\div(-3)2^2$

11. $\dfrac{\left[\frac{3}{4}--\frac{1}{2}\right](-8)}{\frac{8}{9}\div -4}$

12. $\dfrac{-20\left[-12\div(-\frac{2}{3})\right]}{-12(-\frac{2}{3})}$

Evaluate each expression if $a=-5,\ b=0.25,\ c=\dfrac{1}{2},\ d=4$, $e=.6$

13. $\dfrac{3a+4c}{2c}$

14. $\dfrac{3ab}{cd}$

15. $\dfrac{ae}{c}+d^2$

16. $\dfrac{d(b-c)}{ac}$

II. SIMPLIFYING EXPRESSIONS--Use distributive property to simplify.

17. $3.4t+1.6s-(-1.9t-4.2s)$

18. $2[-7(x+2y)-x]-3(x+2y)5$

19. $-50-2[3(1-f)-3(-2+f)]$

20. $5x(3x-5)+7x(1-5x)$

21. $\frac{1}{3}xy^2(9x^2-6xy+y^2)$

22. $2[-7(r+2s)-r]-3(s+2r)$

23. $4[2(-5x+y)-y]-10(y-4x)$

24. $-15-3[2(g-7)-2(1-g)]$

III. SOLVING EQUATIONS-- Solve the following equations. Be sure to check your solutions.

25. $9-\frac{4}{5}(u-3)=1$

26. $-\frac{3}{2}(d-2)=21$

27. $\frac{1}{5}[4(k+2)-2(3-k)]=4$

28. $(c+3)-2c-(1-3c)=2$

29. $\frac{3n-2}{4}=\frac{8n+6}{5}$

30. $\frac{3}{4}n-2=\frac{1}{2}n+7$

31. $4(a+2)=14-2(3-2a)$

32. $2(g-2)-4=2(g-3)$

33. $2x+\frac{2}{3}(4-x)=\frac{1}{6}(4x+5)+\frac{9}{2}$

34. $4(\frac{1}{2}x+7)-3x=\frac{1}{3}(9-6x)+23$

35. $\frac{5}{2}t-t=3+\frac{3}{2}t$

36. $-\frac{2}{3}(-\frac{4}{5}x+2)-\frac{2}{5}x=\frac{3}{4}(-x-1)$

Solve for the given variable:

37. Solve for W: $P=2W+2L$

38. Solve for P: $A=P+\mathrm{Pr}t$

39. Solve for F: $C=\frac{5}{9}(F-32)$

40. Solve for b_2: $A=\frac{1}{2}(b_1+b_2)h$

IV. WORD PROBLEMS

41. Jim's weekly pay is two thirds of Alicia's. Together they earn $600 per week. What is each person's weekly pay?

42. Bob is 24 years younger than his father. In 2 years, he will be half as old as his father. How old is each now?

43. The length of a rectangle is 15 cm more than the width. A second rectangle whose perimeter is 72 cm is 5 cm wider but 2 cm shorter than the first rectangle. What are the dimensions of both rectangles?

44. Lizzy bought several apples at 20 cents each, ate two of them, and sold the rest for 30 cents each. She made a profit of $2.20. How many apples did she buy?

45. In a collection of coins worth $9.13, there are twice as many dimes as quarters, four more nickels than dimes, and twice as many pennies as nickels. How many of each kind of coin are in the collection?

46. Inga invested part of her $6000 savings in common stock and the rest in rare stamps. At the end of the year, she realized a gain of 9% on the stock and 12%on the stamps. If her savings now amounts to $6615, how much did she invest in stamps?

47. A car travels 418 km in 6 hours. One hour of the trip is in the city, where the average speed is just half of what the car averaged on the turnpike for the rest of the trip. What was the car's average city speed?

48. Laura can run at 8 m/s and Mary at 7.5 m/s. On a race track, Mary is given a 25 m head start and the race ends in a tie. How long is the track?

49. A local radio station is having a drawing to win tickets to see Nickelback in concert. The winners will be driven in a limousine that holds 8 passengers. Concert tickets cost $22 for adults and $19 for students. After renting the limousine, the radio station has $167 left in their giveaway budget to buy the eight tickets. How many adult tickets and student tickets can the station buy?

50. Consuela walks from her house to the recreation center at 6 km/h, stays for 45 minutes and then gets a ride back home at 48 km/h. If she arrives home 1.5 hours after she started out, find the distance from home to the recreation center.

51. Joshua is doing a chemistry experiment that calls for a 30% solution of copper sulfate. He has 40 mL of 25% solution. How many milliliters of 60% solution should Joshua add to obtain the required 30% solution?

52. How many kilograms of water must be evaporated from 13 kg of a 20% salt solution to produce a 60% solution?

V. IDENTIFYING NUMBERS

Determine whether each statement is true or false. If false, give an example of a number that shows the statement is false.

53. Every real number is irrational.

54. Every integer is a rational number.

55. Every rational number is an integer.

56. Every irrational number is a real number.

57. Every natural number is an integer.

58. Every real number is either a rational number or an irrational number.

VI. ABSOLUTE VALUE EQUATIONS

59. $|2x+9|=30$

60. $8|4x-3|=64$

61. $7+\frac{3}{4}|x-2|=9$

62. $\frac{2}{3}\left|\frac{1}{4}x+7\right|+9=7$

VII. SOLVING INEQUALITIES. Graph to find the solution and write your answer in interval notation.

63. $2(x-5)-3(2x-5)<5x+1$

64. $20(\frac{1}{5}-\frac{x}{4})\geq -2x$

65. $-\frac{4x+2}{5}\geq 0.04$

66. $\frac{3x-3}{5}<\frac{6(x-1)}{10}$

67. $4m-5>7$ or $4m-5<-9$

68. $10-2p>12$ and $7p<4p+9$

69. $2-5(2y-3)>2$ or $3y<2(y-8)$

70. $\frac{5}{7}(-1+x)\leq \frac{45}{21}$ or $-x+\frac{2}{3}\leq -\frac{10}{3}$

71. $14<3h+2<2$

72. $\frac{4-y}{5}-\frac{7+3y}{2}\leq -2-\frac{1+11y}{4}$

73. $7\leq 5-2y\leq 13$ and $1\leq 9-4y\leq 13$

74. $-2<4-3n\leq 6$ or $17>5n+12>7$

75. $4+\frac{t}{3}<3$ and $\frac{9+4t}{3}>-5$

76. $6\leq 9-\frac{1}{2}t\leq 10$

77. $5x+7>2x+4$ or $3x+3<24-4x$

78. $x-7<3x-5<x+11$

79. $-11 < 4v - 3 < 5$ or $v - 5 < 7 - 2v \le 3$

80. $7 - \frac{4d}{5} < \frac{3}{5}$ or $1 - \frac{d}{2} > 4$

81. $-2(7-3h) < -8 + 2h$ or $-7h + 22 < 9 - 3(h+5)$

82. $\frac{1}{2}(2-5r) < 6 - r$ and $r > 7 - \frac{1}{4}r + 8$

83. $-2 < 4 - 3n \le 6$ or $17 > 5n + 12 > 7$

84. $20 \ge 8 - 3x \ge -7$ and $-7 < 6x - 1 < 41$

VIII. SOLVING ABSOLUTE INEQUALITIES

85. $-\frac{1}{3}|6 - 4x| + 2 \le 1$

86. $1 - \left|\frac{1}{4}y + 8\right| > \frac{3}{4}$

87. $6 + 5|2r - 3| \ge 4$

88. $2 \le |x - 1| \le 5$

89. $|x + 1| \le |x - 3|$

90. $\frac{1}{2}|d| + 5 \ge 2|d| - 13$

91. $|a + bx| \ge c$, solve for x

92. $a + |bx| > c$, solve for x

IX. PROBLEM SOLVING USING INEQUALITIES

Express each statement in terms of an inequality involving absolute value. Do not solve.

93. The diameter of the lead in a pencil ***p*** must be within 0.01 millimeters of 1 millimeter.

94. The cruise control of a car set at 55 mph should keep the speed ***s*** within 3 mph of 55mph.

Write an inequality to describe each situation and then solve.

95. The three sides of an equilateral triangle are increased by 20 cm, 30 cm, and 40 cm, respectively. The perimeter of the resulting triangle is between twice and three times the perimeter of the original triangle. What can you conclude about the length of a side of the original triangle?

96. The telephone company offers two types of service. With plan A, you can make an unlimited number of local calls per month for $18.50. With Plan B, you pay $6.50 monthly, plus 10 cents for each min of calls after the first 40 minutes. At least how many minutes would you have to use the telephone each month to make Plan A the better option?

97. A subway train make six stops of equal length during its 21 km run. The train is actually moving for 20 minutes of the trip. At most how long can the train remain at each station if the average speed for the trip, including stops, is to be at least 36 km/h?

98. Find all triples of consecutive integers such that 11 times the largest of the integers is at least 46 more than the product of the other two.

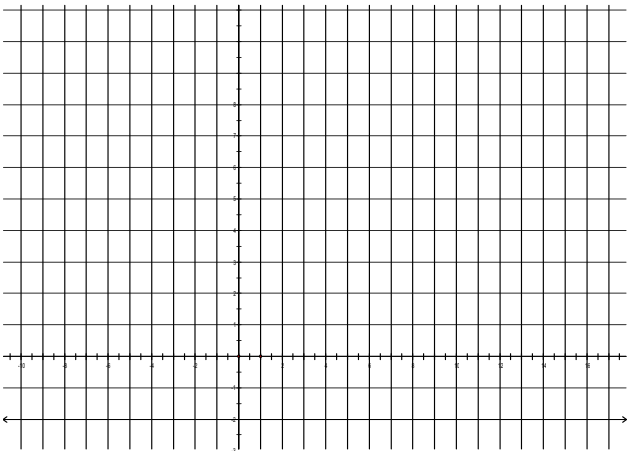
X. SLOPES OF LINES

Find the slope of each line.

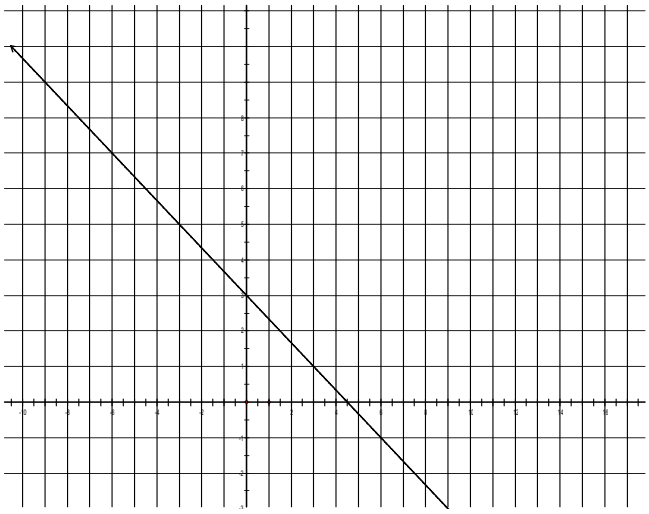
99. (-3,6) and (4,-1)

100. $\left(-\frac{2}{3},-\frac{5}{4}\right)$ and $\left(-\frac{4}{5},\frac{1}{2}\right)$

101.



102.



Find the value of k so that the line through the given points has slope m.

103. $(2k,3)$ and $(1,k)$; $m=2$

104. $(k+1,k-1)$ and $(k,-k)$; $m=k+1$

XI. LINES

Find the x-intercepts and y-intercepts of each line

105. $4x-3y=27$

106. $\frac{3}{2}x-\frac{1}{3}y=20$

Graph the following lines.

107. $x=-7$

108. $\frac{x-y}{2}=\frac{x+y}{4}$

109. Graph a line through (3, 1.5) that is perpendicular to the graph of $y=3$.

110. Graph a line through (-4,-2) with an undefined slope.

111. Graph the line perpendicular to the graph of $3x-2y=24$ that intersects it at its x-intercept.

112. Graph the line that passes through (-3,-1) and has a slope of .75.

113. Write an equation of a line using point slope given the point $\left(-\frac{1}{2},\frac{4}{3}\right), m=\frac{1}{5}$ and rewrite in standard form.
114. Write an equation of a line using point slope given the point (– 2, – 4), m = 0.4 and rewrite in standard form.

115. Find an equation in standard form that passes through the points (– 2, 3) and (– 2, 6).

116. Find an equation in standard form that passes through the origin and has slope 0.
117. Find an equation in standard form that has a y-intercept of 6 and is parallel to the x-axis.

118. Find an equation in standard form that has an x-intercept of – 4 and is perpendicular to the x-axis.

119. Find an equation in standard form that passes through (1,2) and perpendicular to y – 2x = 3.

XII. LINEAR SYSTEMS

Solve.

120. $3x + 2y = -1$
$2x + y = 1$

121. $3x + 3y = 6$
$5x - 6y = 15$

122. $6x = 4y + 5$
$6y = 9x - 5$

123. $2x + 4y = 16$
$-\frac{1}{2}x - y = -4$

Graph each system of inequalities.

124. $y \le -2x + 1$
$y > -\frac{1}{2}x - 2$

125. $5x - 2y \le 6$
$5x < 2y + 4$