

Algebra 2 Review Packet

Evaluate each expression using order of operations

1.  $90 \div 3 + 5$  \_\_\_\_\_      2.  $9 - 3 \div 4 + 2 \cdot 12 + 6 \div 2 \cdot 3$  \_\_\_\_\_  
3.  $4 + 1 \cdot 4^2 - 3$  \_\_\_\_\_      4.  $6 + 3^3 - 18 \div 6$  \_\_\_\_\_

Substitute 4 for x, -4 for y and -12 for z to evaluate each expression

5.  $z - y$  \_\_\_\_\_      6.  $(x - y) + z$  \_\_\_\_\_      7.  $y - z$  \_\_\_\_\_  
8.  $x - x - x - x - x$  \_\_\_\_\_      9.  $y - (x - z)$  \_\_\_\_\_      10.  $(x - y)^2$  \_\_\_\_\_

Simplify the following expressions

11.  $3(f + g) + 7g$  \_\_\_\_\_      12.  $x + y - (3z + y)$  \_\_\_\_\_  
13.  $(3 - r) + (4r - 3s + 2) - (1 - s)$  \_\_\_\_\_  
14.  $2(3x - 5y) - (2x - 3y - z) + (y - z)$  \_\_\_\_\_  
15.  $-3(2 - 7m)$  \_\_\_\_\_  
16.  $\frac{-18w + 12}{-6}$  \_\_\_\_\_      17.  $\frac{32y + 24y}{8}$  \_\_\_\_\_

Solve each equation for the variable

18.  $4x + 7 = 3x + 18$  \_\_\_\_\_      19.  $5(3x + 5) = 4x - 8$  \_\_\_\_\_  
20.  $2(y + 2) + y = 19 - (2y + 3)$  \_\_\_\_\_  
21.  $\frac{1}{2}x + 7 = \frac{3}{4}x - 4$  \_\_\_\_\_      22.  $23x + 34 = 23 - 12x + 7x$  \_\_\_\_\_  
23.  $2(3h - 1) + 4h = 10(2 - 3h) + 38h$  \_\_\_\_\_  
24.  $3(x - 3) - 7(x + 3) = 4(2x - 3) - 8(2x + 3)$  \_\_\_\_\_  
25.  $9(2 - y) + 3(5 + 2y) = 2(7 - 2y) - 4(y - 1)$  \_\_\_\_\_

Find the slope of the line containing each pair of points.

Recall that the slope formula is :  $m = \frac{y_2 - y_1}{x_2 - x_1}$

26. ( 3,9) and ( 1,5) \_\_\_\_\_ 27. ( -1,3) and (5,3)\_\_\_\_\_

28. ( -9,9) and 7,-2) \_\_\_\_\_ 28. ( -3,-8) and ( -6,-2) \_\_\_\_\_

Write an equation for each line in slope intercept form:  $Y = mx + b$

29. slope is 2 and the y intercept is 4 \_\_\_\_\_

30. slope is -3 and the x intercept is 2 \_\_\_\_\_

31. passing through the points ( -1,-2) and ( 0,7) \_\_\_\_\_

32. passing through the points ( -2,3) and ( 8, 4) \_\_\_\_\_

33. parallel to the line  $2x - 3y = 9$  and having a y intercept of 3 \_\_\_\_\_

34. perpendicular to the line  $y - 4x = 2$  and passing through the point ( -1,-2)  
\_\_\_\_\_

35. parallel to the line  $y = 5$ , and passing through the point ( 6, -7) \_\_\_\_\_

Solve each inequality and graph the solution on a number line.

36.  $x - 5 < -2$  

37.  $-5x \geq 2x - 6$  

38.  $2x - 1 \geq 1$  and  $6x + 4 < 16$  

39.  $x + 4 < 1$  or  $x + 1 > 0$  

40.  $-10 < 2x - 2 < -4$  

Simplify each product

41.  $c^3 \cdot c^4$  \_\_\_\_\_ 42.  $2x^2 y^3 \cdot -4x^5 y^4$  \_\_\_\_\_ 43.  $(2y^8)^2$  \_\_\_\_\_

44.  $5^3 \cdot 5^6$  \_\_\_\_\_ 45.  $(-3a^2b)(6ab^4c)$  \_\_\_\_\_

46.  $\frac{-16x^7r^2}{-4xr}$

47.  $\frac{a^5b^5c^5}{-a^2b^3c^4}$

48.  $\frac{(x^3y)^2}{x^3y^4}$

49. Write without any negative exponents:  $2n^{-2}$  \_\_\_\_\_,  $m^5n^{-3}$  \_\_\_\_\_

50. Write in scientific notation: .000345 \_\_\_\_\_, 3,986,600 \_\_\_\_\_

51. Write in decimal notation:  $4.56 \cdot 10^{-3}$  \_\_\_\_\_,  $9.8 \cdot 10^3$  \_\_\_\_\_

Rewrite in standard form:

52.  $5n^2 + 2n + 3n^4 - n$  \_\_\_\_\_

53.  $6x - 2x^3 + 3x^2 + 1$  \_\_\_\_\_

Find the sum of the polynomials:

54.  $3f^2 - f + 7f$  and  $2f^2 - 3f - 4$  \_\_\_\_\_

55.  $7x^3 - 3x + 2 - x^2 + 2$  \_\_\_\_\_

Find the difference of the polynomials

56.  $10a^2 + 2a - 8 - (9a^2 + 8)$  \_\_\_\_\_

57.  $(6x^3 - 10x - 9) - (7x^2 - x^3 + 8)$  \_\_\_\_\_

Find the product of the polynomials

58.  $7x^2y(8x^3 - 3xy^4)$  \_\_\_\_\_

59.  $(x - 3)(x + 8)$  \_\_\_\_\_

60.  $(x - 4)^2$  \_\_\_\_\_

61.  $(3x - 1)(2x + 3)$  \_\_\_\_\_

62.  $(2x + 1)^2$  \_\_\_\_\_

Factor each completely:

63.  $3q^2 + 6q^5 + 9q$  \_\_\_\_\_

64.  $x^2 - 4$  \_\_\_\_\_

65.  $10wz^2 - 5wz + 15w^2z$  \_\_\_\_\_

66.  $x^2 - 6x + 9$  \_\_\_\_\_

67.  $25a^2 - 1$  \_\_\_\_\_

68.  $b^4 - 2b^2 + b^2 - 2$  \_\_\_\_\_

69.  $g^2 - 3g - 40$  \_\_\_\_\_

70.  $x^2 + 17x + 60$  \_\_\_\_\_

71.  $x^2 + 9x - 36$  \_\_\_\_\_

Solve using the zero product property

72.  $(x - 1)(x + 2) = 0$

73.  $2x(x - 7) = 0$

74.  $x^2 - 2x - 15 = 0$

75.  $x^2 - 25 = 0$

Use graph paper to graph each linear equation

76.  $y = -2x - 5$

77.  $3y = 6x + 18$

78.  $2y + 4x = 8$

79.  $y - 7 = x + 2$

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

**FOR ALGEBRA 2 HONORS STUDENTS ONLY**

81. Graph the absolute value functions listed below. For each, state the domain and range.

a.  $y = |x - 3|$

b.  $y = -|x + 1| - 2$

c.  $y = 2|x - 1| - 4$

82. Solve the system of equations using **BOTH** elimination and substitution methods

a.  $3x + y = 13$   
 $2x - y = 2$

b.  $y = -3x$   
 $x = 6y + 38$

83. Classify the following systems

a.  $2x + 3y = 4$   
 $8 - 6y = 4x$

b.  $4x - 3y = 12$   
 $12x + 9y = -36$

84. Mary has a total of 30 dimes and nickels in his pocket worth \$ 2.35. How many of each coin does he have ?

85. How many ounces of a 25 % acid solution should be mixed with a 50 % acid solution to produce 100 ounces of a 40 % acid solution?