Westside High School

Summer Assignment

Algebra 2 Advanced

Name _____ Period _____

Important Instructions for students!

- Be sure to show all work, work on a separate sheet of paper, be sure to attach it to this assignment.
- Work should be neat and labeled for each problem.
- Assignment is due the 3rd week of school.
- Assignment will be extra credit for a major in the first six weeks of school.

Solve each equation and check your solution by plugging it back in and showing the solution is true.

1. $20 = y - 8$

2. $w - \dfrac{1}{2} = \dfrac{5}{8}$

3. $-17 = b + 4$

4. $\dfrac{h}{3} = -2$

5. $\dfrac{1}{8}m = 6$

6. $\dfrac{1}{5}p = \dfrac{3}{5}$

7. $3h = -42$

8. $-\dfrac{1}{2}m = 16$

9. $-3t = 51$

10. $6 - b = 5b + 30$

11. $5y - 2y = 3y + 2$

12. $5x + 2 = 2x - 10$

13. $4n - 8 = 3n + 2$

14. $1.2x + 4.3 = 2.1 - x$

15. $4.4x + 6.2x = 8.8x - 1.8$

16. $\dfrac{1}{2}b + 4 = \dfrac{1}{8}b + 88$

17. $\dfrac{3}{4}k - 5 = \dfrac{1}{4}k - 1$

18. $8 - 5p = 4p - 1$

19. $-3(x + 5) = 3(x - 1)$

20. $2(7 + 3t) = -t$

21. $3(a + 1) - 5 = 3a - 2$

Solve each equation or formula for the variable specified.

22. $ax - b = c$ *for x*

23. $15x + 1 = y$ *for x*

24. $(x + f) + 2 = j$ *for x*

25. $xy + z = 9$ *for y*

26. $x(4 - k) = p$ *for k*

27. $xy + xz = 6 + a$ *for x*

Writing equations of lines

28. Write an equation for the function in functional notation. Then complete the table.

X	-1	0	1	2	3
f(x)	-2	2	6		

29. Write an equation for the function in functional notation. Then complete the table.

X	-2	-1	0	1	2
f(x)	10	7	4		

30. Write an equation in functional notation
    for the graph given.
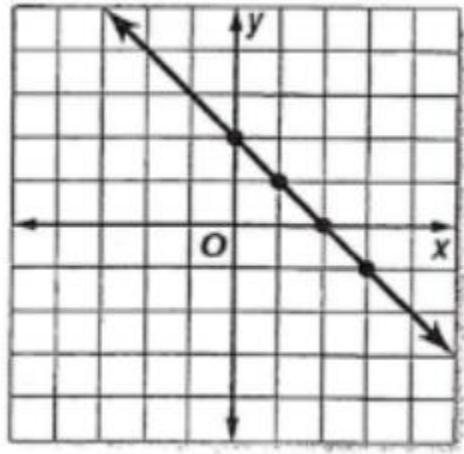
31. Write an equation in functional notation
    for the graph given.
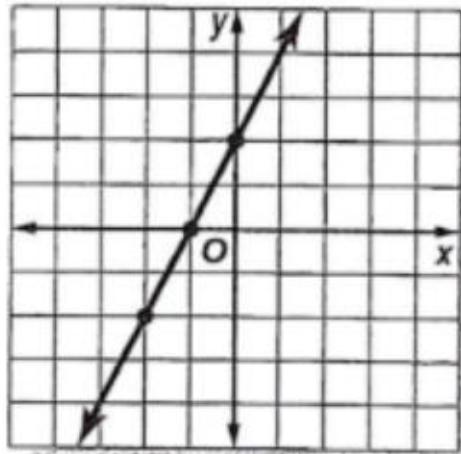
**Write an equation of the line in standard form (Ax+By=C) with the given information.**

32. Slope: 8, y-intercept: -3

33. Slope: -2, point (5,3)

34. Slope: -1, y-intercept: -7

**Write an equation of the line in standard form for each graph.**

35.
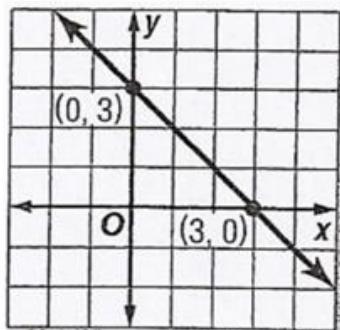
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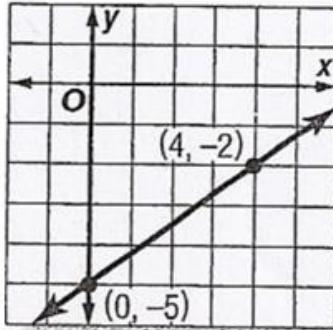
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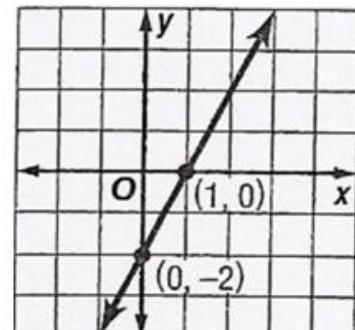
**Graph each equation. (graph all the points that fit on the graph)**

38. $2x - y = -1$
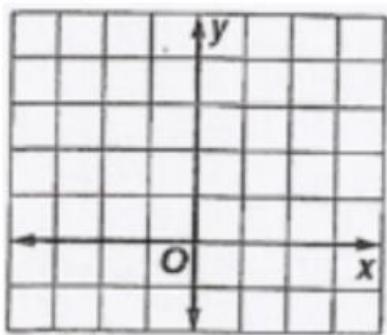
39. $3x + y = 2$
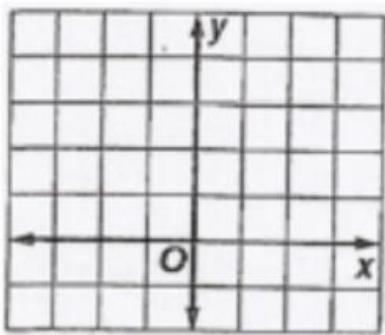
40. $2x - y = -1$
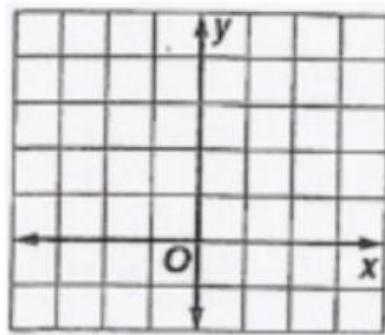
Graph each system of equations. Then determine whether the system has no solution, one solution, or infinitely many solutions. If the system has one solution, give it.

41. $\begin{array}{l} y = -2 \\ 3x - y = -1 \end{array}$

42. $\begin{array}{l} x = 2 \\ 2x + y = 1 \end{array}$

43. $\begin{array}{l} y = \dfrac{1}{2}x \\ x + y = 3 \end{array}$

44. $\begin{array}{l} 2x + y = 6 \\ 2x - y = -2 \end{array}$

45. $\begin{array}{l} 3x + 2y = 6 \\ 3x + 2y = -4 \end{array}$

46. $\begin{array}{l} 2y = -4x + 4 \\ y = -2x + 2 \end{array}$
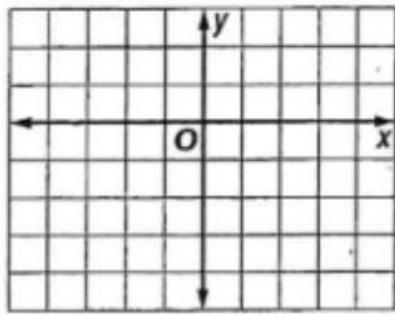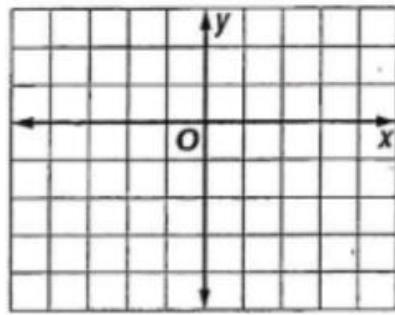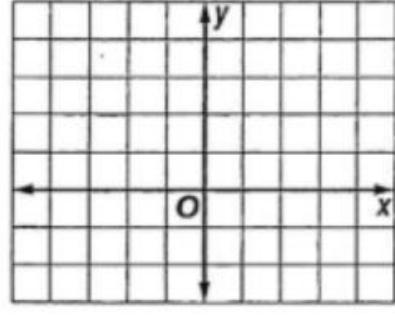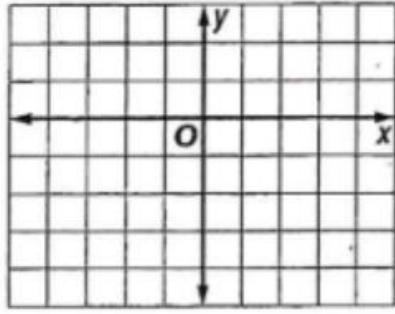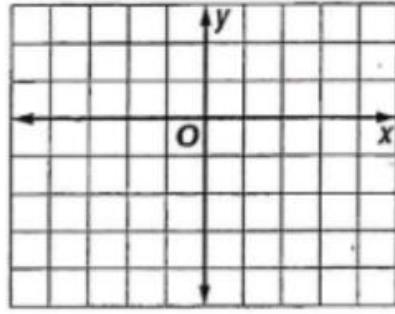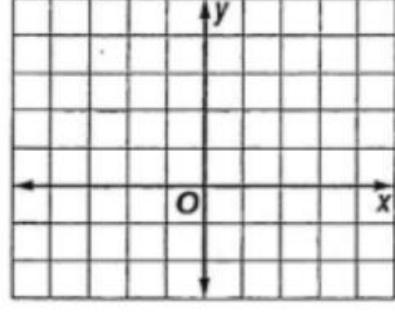
Use Substitution to solve each system of equations. If the system does not have exactly one solution, state whether it has no solution or infinitely many solutions.

47.
$$y = 4x$$
$$3x - y = 1$$

48.
$$x = 2y$$
$$y = x - 2$$

49.
$$x = 2y - 3$$
$$x = 2y + 4$$

Use Elimination to solve each system of equations.

50.
$$x + y = -4$$
$$x - y = 2$$

51.
$$2m - 3n = 14$$
$$m + 3n = -11$$

52.
$$3a - b = -9$$
$$-3a - 2b = 0$$

Multiply a polynomial by a monomial

Find each product.

53. $x\left(5x + x^2\right)$

54. $x\left(4x^2 + 3x + 2\right)$

55. $-2xy\left(5y + 4x^2\right)$

56. $-2g\left(g^2 - 2g + 2\right)$

57. $3x\left(x^4 + x^3 + x^2\right)$

58. $-4x\left(2x^3 - 2x + 3\right)$

Multiplying polynomials

59. $(x + 2)(x + 3)$

60. $(x - 4)(x + 1)$

61. $(x - 6)(x - 2)$

62. $(p - 4)(p + 2)$

63. $(3x - 4)^2$

64. $(2x - 1)(x + 5)$

65. $(3n - 4)(3n - 4)$

66. $(8m - 2)(8m + 2)$

67. $(k + 4)(5k - 1)$

Factor using greatest common factor

68. $24x + 48y$

69. $30mn^2 + m^2n - 6n$

70. $q^4 - 18q^3 + 22q$

71. $9x^2 - 3x$

72. $4m + 6n - 8mn$

73. $45s^3 + 15s^2$

74. $14c^3 - 42c^5 - 49c^4$

75. $55p^2 - 11p^4 - 44p^5$

76. $14y^3 - 28y^2 + y$

Factoring Trinomials

77. $x^2 + 4x + 3$

78. $x^2 + 12x + 32$

79. $x^2 - 3x + 2$

80. $x^2 - x - 6$

81. $x^2 - 4x - 21$

82. $x^2 - 22x + 121$

83. $x^2 - 4x - 12$

84. $x^2 - 16x + 64$

85. $9 - 10x + x^2$

86. $x^2 + 6x + 5$

87. $x^2 + 8x - 9$

88. $x^2 - 7x - 8$

89. $x^2 - 2x - 3$

90. $x^2 + 14x + 13$

91. $x^2 + 9x + 20$

Factoring trinomials with a leading coefficient

92. $2x^2 - 3x - 2$

93. $3x^2 - 8x - 3$

94. $16x^2 - 8x + 1$

95. $6x^2 + 5x - 6$

96. $18x^2 - 27x - 5$

97. $3x^2 + 2x - 8$

98. $2x^2 + 5x + 3$

99. $18x^2 + 9x - 5$

100. $4x^2 + 19x + 21$