SUMMER PACKET **Name**_____

DIAGNOSTIC TEST FOR ALGEBRA 2

Evaluate the expression. (Simplify completely when possible.)

1) $-11+6$ **2)** $-7-19$ **3)** $9(-9)$

4) $42\div(-6)$ **5)** $5(9-15)$ **6)** $\dfrac{30-6}{2\bullet 4^2-20}$

7) $\dfrac{3}{8}+\dfrac{7}{8}$ **8)** $\dfrac{2}{3}-\dfrac{5}{12}$ **9)** $12.65-9.899$

10) $\dfrac{6}{9}\bullet\dfrac{12}{14}$ **11)** $\dfrac{18}{7}\div\dfrac{6}{14}$

12) $17.5(3.65)$ **13)** $\left(\dfrac{2}{9}+\dfrac{5}{6}\right)-\dfrac{1}{3}$

14) $\sqrt{36}$ **15)** $\pm\sqrt{16}$ **16)** $-2\sqrt{81}$

Approximate the square root.

17) $\sqrt{52}$ **18)** $-\sqrt{108}$ **19)** $\sqrt{80}$

Simplify completely. (Rationalize the denominator if needed.)

20) $\sqrt{28}$ **21)** $\sqrt{6}\bullet\sqrt{12}$ **22)** $3\sqrt{\dfrac{7}{12}}$

23) $3\sqrt{6}-8\sqrt{6}$ **24)** $\sqrt{128}+\sqrt{50}$ **25)** $\sqrt{3}\bullet\sqrt{6}-\sqrt{18}$

Write a variable expression for the verbal phrase.

26) 36 divided by x

27) x minus 19

28) 45 plus x

29) –8 times x

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29. _____

Evaluate the expression for the given value.

30) $-6x$ when $x = -9$

31) $\frac{y}{7}$ when $y = -49$

Simplify the expression.

32) $-28 + 13x + 16$

33) $10x - (-3x + 5)$

34) $(2y^2 - 9y + 16) - (5y^2 + 3y - 3)$

35) $(6x^2 + 7x + 1) + (-2x^2 - 8)$

36) $4y(2 - y) + 3y^2$

37) $-7x + 8(-2x + 5)$

Evaluate the expression

38) $3^3 \bullet 3^2$

39) $\left(\frac{1}{2}\right)^{-1}$

40) $\frac{5^6}{5^4}$

Simplify the expression. The simplified expression should have no negative exponents.

41) $\frac{4x^8}{6x^{-5}}$

42) $(3x \bullet x^3)^{-2}$

43) $(12xy)^0 (x^2y^4)^5$

Simplify the product.

44) $(2x)(3x^3 - 5x)$

45) $(6xy^2)(-8x + 9y)$

46) $\frac{x^2y}{3y^3x^3} \bullet \frac{18x^4y^2}{xy^6}$

47) $\frac{2x^{-2}y}{3y^{-3}x^2} \bullet \frac{3x^4}{8y^{-2}}$

Evaluate. Write result in scientific notation.

48) $(3 \times 10^3) \bullet (9 \times 10^{-2})$

49) $\frac{2.4 \times 10^{-2}}{1.2 \times 10^{-5}}$

State the inverse.

50) Subtract 21

51) Divide by –6

52) Multiply by 14

Solve the equation.

53) $x - 18 = -3$

54) $\frac{2}{3}x = 18$

55) $5x - 3 = 12$

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36. _____
37. _____
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42. _____
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46. _____
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50. _____
51. _____
52. _____
53. _____
54. _____
55. _____

Solve the inequality.

56) $x + 4 < 18$

57) $-9 \geq 5 + x$

58) $-8x \leq 40$

59) $\frac{x}{12} > -\frac{1}{3}$

60) $6 < -5x + 11$

61) $9 \leq \frac{2}{3}x - 3$

Solve the equation if possible.

62) $16x + 24 = 7(x + 6)$

63) $-4(2x - 1) = 3 - 8x$

64) $5(2x - 3) = -15 + 10x$

65) $-6x^2 = -216$

Solve the inequality.

66) $3(4x - 5) < -3x$

67) $-6 - x \geq -7x + 12$

68) $8(2 - x) \leq -4(x - 5)$

Solve the proportion.

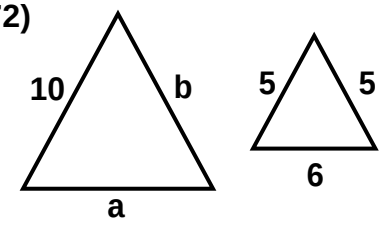
69) $\frac{x}{8} = \frac{3}{12}$

70) $\frac{x + 6}{4} = \frac{-4x}{16}$

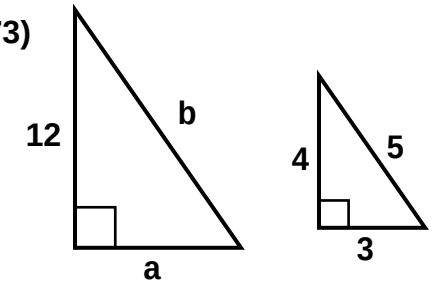
71) $\frac{2}{3} = \frac{x + 7}{3x}$

The triangles shown are similar. Find the missing sides.

72)



73)



56. _____

57. _____

58. _____

59. _____

60. _____

61. _____

62. _____

63. _____

64. _____

65. _____

66. _____

67. _____

68. _____

69. _____

70. _____

71. _____

72. a = _____

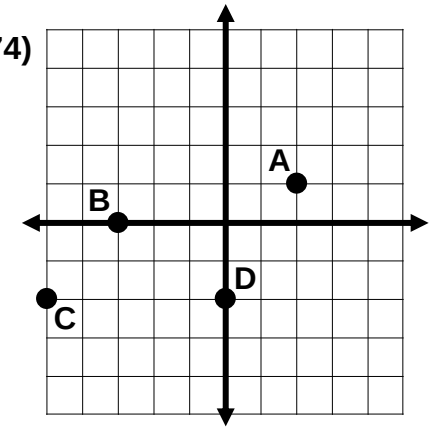
b = _____

73. a = _____

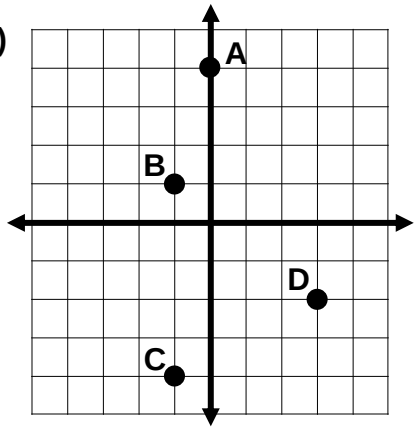
b = _____

Write the ordered pairs that correspond to the points labeled A, B, C, and D in the coordinate plane.

74)

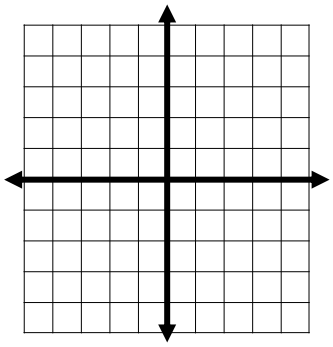


75)

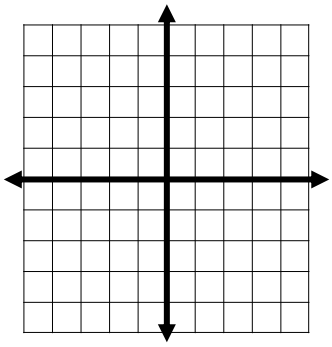


Plot the ordered pair in a coordinate plane and tell whether it is in Quadrant 1, 2, 3, or 4.

76) $(-3,2)$



77) $(5,-1)$

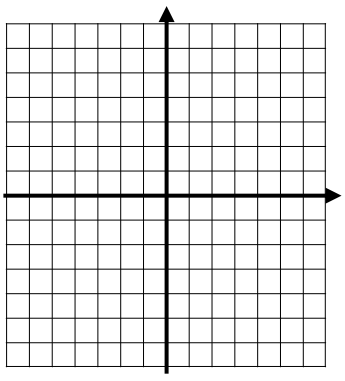


Find the slope & y-intercept of the graph of the equation.

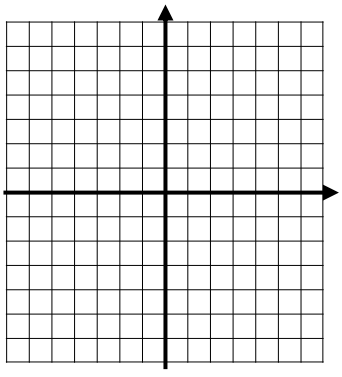
78) $y = -2x + 7$ **79)** $3x + 6y = 12$ **80)** $y = \dfrac{2x+7}{14}$

Graph the equation.

81) $y = x + 3$



82) $y = -2x + 1$



74. A_____

B_____

C_____

D_____

75. A_____

B_____

C_____

D_____

76. Quadrant _____

77. Quadrant _____

78. m = ____, b= ____

79. m = ____, b= ____

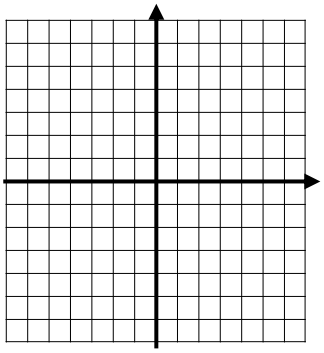
80. m = ____, b= ____

81. *See graph*

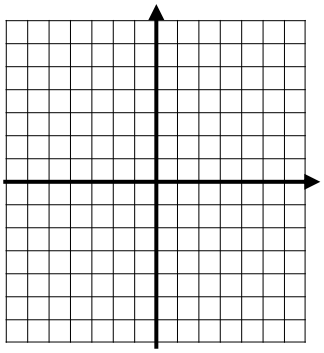
82. *See graph*

Find the x-intercept and the y-intercept of the line. Graph the equation. Label the intercepts.

83) $y = x - 5$

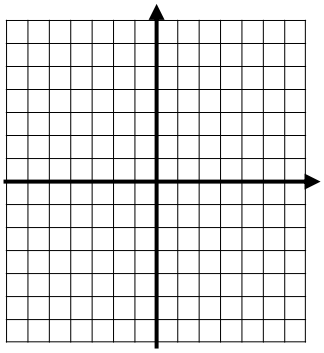


84) $6x + 2y = -12$

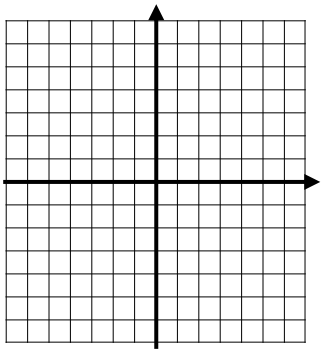


Sketch the graph of the function. Label the vertex.

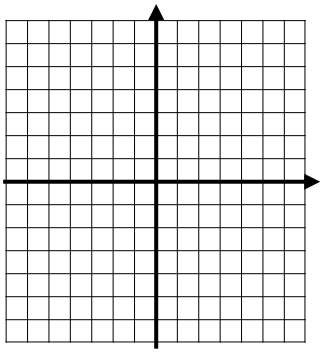
85) $y = 3x^2$



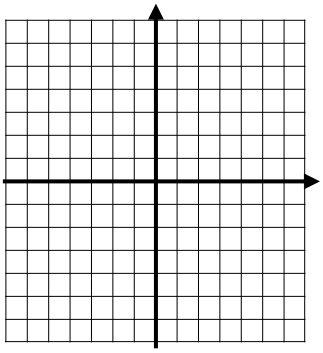
86) $y = x^2 + 4x - 2$



87) $y = |x|$



88) $y = |x - 3|$



Factor out the greatest common factor.

89) $-4x^3 - 20x^2 + 16x$

90) $15x^5 - 10x^4 + 5x^2$

91) $3x^5y^2 - 21x^2y^7$

92) $-2x^2y^3 + 7xy^7$

83. – 88. ***See graph***

89._____

90._____

91._____

92._____

Factor each completely:

93) $x^2 + 6x + 9$

$(\quad)(\quad)$

94) $x^2 - 12x + 36$

$(\quad)(\quad)$

95) $x^2 - 2x - 24$

96) $x^2 + 2x - 35$

97) $2x^2 + x - 6$

98) $9x^2 + 24x + 16$

99) $3x^2 - 17x - 56$

100) $12x^2 + 46x - 36$

101) $9x^2 - 81$

102) $x^2 + 20x + 100$

103) $121 - x^2$

104) $x^4 - 9x^2$

105) $x^3 + 11x^2 + 28x$

106) $-3x^3 - 15x^2 - 12x$

107) $8x^3 - 3x^2 + 16x - 6$

93._____

94._____

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100._____

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102._____

103._____

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105._____

106._____

107._____