Algebra Review Packet Semester 1 Name_____

Show all work done for each problem, like on the semester exam.

Write each algebraic expression in words.

1. $2 + x$

2. $\frac{r}{3}$

3. $6(y - 1)$

Evaluate if a = -1, b = 2, c = -2

4. $-4ac$ ____

5. $a(b - c)$ ____

6. $\frac{3a-b}{-c}$ ____

7. $-3b^2 + 1$ ____

8. $(a + b)(c - b)$ ____

Simplify

9. $-6 - 8 + 3$ _____

10. $\frac{-24}{-6}$ _____

11. $2y - 3(y + 2)$ _____

12. $24 - 3 + 15 + (-4)^2$ _____

13. $-3x^2 - 6(-2 - x^2)$ _____

14. $\sqrt{25} + 4 \div -2$ _____

15. $3 - 6 \bullet -1$ _____

16. $-10 + 4 \div -2^2$ _____

Solve.

17. $-30 = 6g$ _____

18. $3 - x = -10$ _____

19. $3c + 4 = -17$ _____

20. $6 + 2(y - 1) = y + 1 + y$ _____

21. $\frac{g+2}{-2} = \frac{g}{4}$ _____

22. Solve for y: $-2x + 4y = 5$ _____

23. What is 22% of 30? _____

24. 7 is what % of 40? _____

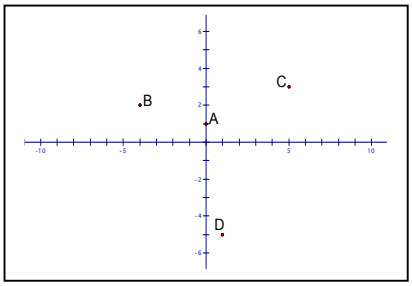
25. 6 is 40% of what ? _____

26. Bob biked 40 miles in 2 hours and 8 minutes. Find his unit rate to the nearest tenth. Label units.

27. Estimate (*without a calculator*) a 20% tip on a bill of $32.92.
28. Sue bought a hat which was marked up 35% from $15. What price did she pay?

29. A pair of $300 ski boots goes on sale for $199. Find the percent discount (decrease).

30. Name the coordinates of each point, as well as the quadrant it lies in.



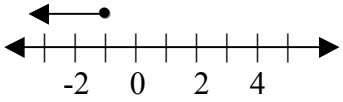
A_____ ___ B _____ ___ C _____ ___ D _____ ___

Generate ordered pairs for each function, for the given values of x: x = -2, -1, 0, 1

31. $y = 2x + 1$ 32. $y = 3|x|$ 33. $y = 2x^2 + 1$

34. *Write the inequality in words*: A. $y \leq -4$ B. $3 < x$

35. *Write the inequality shown by the graph*:



_____

Solve and graph each inequality.

36. $-3 \leq t + 2$ 37. $\frac{y}{-2} > 5$ 38. $\frac{4-2h}{2} \leq -6$ 39. $-3(x - 1) > -3^3$

_____ _____ _____ _____

40. $-3 \leq 2x - 1 < 7$ 41. $2g < -2$ *or* $3g \geq 12$ 42. $-3y + 1 < -19$ *and* $2y + 6 < 20 + y$

_____ _____ _____

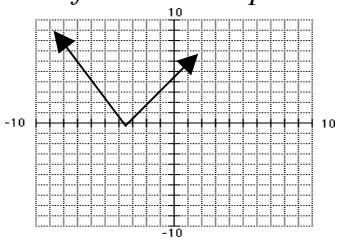
43. $|2x + 1| = 9$ 44. $3 + |x - 1| \geq 5$ 45. $-2|x + 3| > -20$

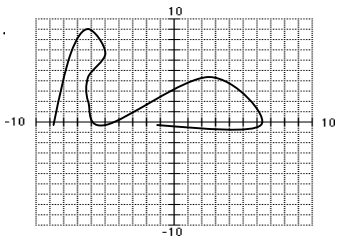
_____ _____ _____

Determine if the following relations represent functions. Explain.

46.

x	-2	0	1	3
y	3	-4	-4	3

47. 

48. 

49. *Write an equation to represent the function*: {(2, -4) (3, -6) (4, -8) (5, -10)} _____

50. To join a service club, membership costs $100 for a one-time fee, plus $5 per week.

A. *Write a function to describe this situation, and define variables*:_____

B. *What is your independent variable*? _____ *What is your dependent variable*?_____

C. If Lori joins the club, how much will she have paid after 6 weeks?

51. Translate each to math:

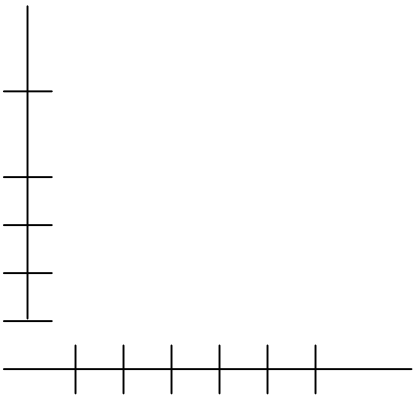
a) The sum of a number and eleven is twenty-four.

b) Eight less than the product of a number and ten is the same as the difference of that number and four.

52. Ben can fix flat tires quickly, and as he works more, he gets faster. The table shows how long it takes him to fix a certain number of bikes.

# of tires	1	2	3	5	6
minutes	10	18	26	38	45

A. *Make a scatterplot of the data and draw a trend line. Label axes*



B. *Describe the correlation.*

C. Predict how long it will take Ben to fix 10 tires.

Solve.

53. $\frac{2}{3}d = -20$

54. $\frac{x}{3} - 1 = \frac{9}{4}$

55. $0.15x + 0.2 = 0.05x$

_____ _____ _____

56. Joe needs to buy bags of chips for a party. He has $20 to spend, and each bag of spicy chips costs $2.50. Write an inequality to represent this situation, and then solve it.

57. The price for a sweater will cost between $25 and $40. Write a compound inequality to represent the cost of the sweater.

58. *What must be true for a function to be linear? Give an example of data points which would represent a linear function.*

x				
y				

Determine if each function is linear. Yes or no?

59. A horizontal line _____ 45. A vertical line _____ 46. A parabola _____ 47. $y = 10a^2b$ _____

Fill in the blank:

60. The slope formula is _____

61. The slope-intercept equation of a line is: _____

62. A vertical line has _____ slope, and a horizontal line has _____ slope.

63. In y = -3x, the slope is _____ and the y-intercept is _____

64. An example of an equation for a vertical line is _____, and a horizontal line is _____.

Matching: Match each definition with the correct vocabulary word.

65. _____ Whole numbers and their opposites

66. _____ A number multiplied by a variable.

67. _____ Ax + By = C

68. _____ A letter which represents a number

69. _____ The vertical axis

70. _____ The value where a line crosses the x-axis.

A. standard form of a line.
B. y-axis
C. x-axis
D. x-intercept
E. y-intercept
F. coefficient
G. variable
I. integers

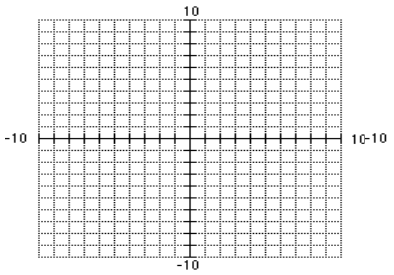
Short answer:

71. *How do you know if an (x,y) point is a solution to an equation?*

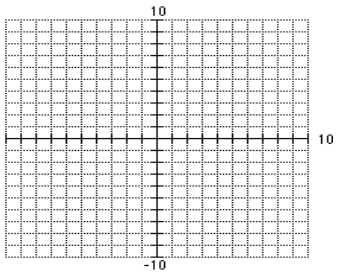
72. *If you solve an equation, how can you check your answer?*

Find the x- and y-intercepts for each equation. Then graph.

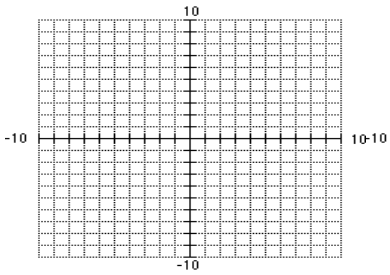
73. $y = 3x - 2$



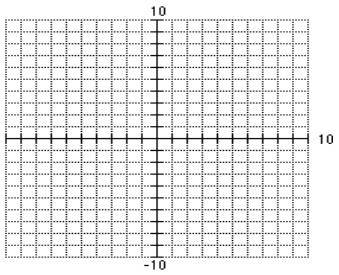
74. $4x + 2y = 10$



75. $2x - 6 = x + -3y$



76. $x = -2$



Write the equation of each line described.

80. slope is $\frac{-3}{5}$, y-intercept is -2

81. it contains (-4,4) (-6, 1)

82. slope = -3, w/ point (-2,2)