Algebra 1: Fall Final Exam Study Guide

Directions: Read each problem carefully. Circle/Box your final answer. *Show all work!*

Simplify each expression

1. $12 \div 4 \cdot 2 + 1^5$

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

3. $-4^2 + 5 \cdot 2 + 3(1 - 6)$

4. $(5x^2 - 4x - 5) + (6x^2 + 7)$

5. $4x^2 - 3 + 2x - 5 + 3x^2$

6. $10x^2 + 3x - 1 + 3x^2 + 4x$

7. $-7(2x + 5)$

8. $2(5x + 9) - 3(8x + 5)$

9. $-2(4x - 4) + 5(2 + x)$

Use a = 4, b = –3 and c = –1 and evaluate each.

10. $2a + 3b - c$

11. $5ac - b^2$

12. $c^2 + 3c - 4$

Solve each equation.

13. $\dfrac{x-1}{3} = \dfrac{x+2}{4}$

14. $\dfrac{1}{2}x - 9 = -1$

15. $4(2x + 1) = (-20)$

16. $4x + 3(x - 2) = 14 - 3x$

17. $-1 + \dfrac{2}{5}x = 7$

18. $\dfrac{3}{5}x + \dfrac{1}{2} = 1 + x$

19. $7(x - 2) - 2(x - 7) = 15$

20. $-5 = 2x - 3$

21. $\dfrac{2}{3}x + 1 = 3x - \dfrac{1}{6}$

22. $-5(x - 6) = x - 12$

23. $\dfrac{x}{3} = \dfrac{x+4}{4}$

24. $3x - 5 = 8 - x$

Write an equation for each, then solve.

25. One number is 12 more than another number. The sum of the numbers is 42. Find the numbers.

26. There are 179 jelly beans in a jar. There are 15 more pink jelly beans than black jelly beans. How many of each color are there?

27. There are 67 M&Ms in a jar. There are twice as many red M&Ms as green M&Ms. there are three more yellow M&Ms as green M&Ms. How many of each color are there?

Write a table and an equation, if necessary, then solve.
Rate Problems

28. Rory and her mom, Lorelai leave from home and travel on the same street toward downtown Stars Hollow. Rory walks at a rate of 2 miles per hour. Rory left 5 hours earlier than Lorelai, but Lorelai bikes at a rate of 6 miles per hour. When will Lorelai catch up to Rory?

29. Rickie and Lucy are 40 miles apart on bicycles heading toward each other on the same road. Rickie bicycles at 8 mph and Lucy rides at 6mph. In how many hours will they meet?
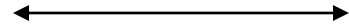
Percent Mixture Problems:

30. A store sells a mixture of raisins and peanuts. Raisins cost $2.50 per kilogram and nuts cost $3.75 per kilogram. How many of each should be mixed to make 15 kilograms of this snack worth $3.00 per kilogram?

31. How many liters of water must be added to 50 Liters of a 25% acid solution in order to produce a 30% acid solution?

Name _____ **Date** _____ **Period** _____

Solve each inequality and graph on a number line.

32. $x - 4 > 17$ 33. $-4x < 80$ 34. $7x - 3 < 10x + 15$

Solve each absolute value equation or inequality and graph on a number line.

35. $|x - 4| = 17$ 36. $|4x| < 20$ 37. $|2x - 3| \geq 15$

Which relation is a function?

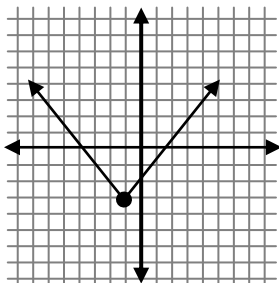38. { (-1,8), (3,5), (2,-5), (-2,-8) } 39. { (3,5), (-2,5), (1,4), (-2,-8) } 40. { (-1,8), (3,5), (1,-5), (-2,8) }

Find the domain, D, and range, R, of each relation.

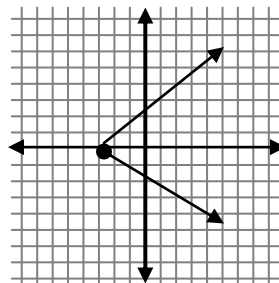41. {(6, 8), (–2, 6), (–8, –2), (–6, –8)} 42. {(6,5), (1,4), (5, –3), (3,2), (–1,5)}

Identify the domain, D, and range, R, of each graph. Which graph is a function?

43. 44.

45. **For** $f(x) = -x - 2$, **find the range given the following domain {–3, –2, –1, 0, 1, 2, 3}.**

Find the slope of the line that passes through the given points.

46. (2, –4) and (–3, 5) 47. (2, 8) and (2, 6) 48. (1, –3) and (4, –3)

Ebuen 3

Name _____ **Date** _____ **Period** _____

Find the equation of the line given the following information:

49. slope $= -2$, y-intercept $(0, 6)$

50. slope $= \dfrac{-1}{2}$, contains $(-4, 3)$

51. contains the points $(1, 3)$ and $(-4, 5)$

52. contains the points $(-2, 4)$ and $(6, 0)$

53. contains the point $(4, -7)$ and is parallel to the line $y = -2x - 5$

54. contains the point $(6, 7)$ and is perpendicular to $y = -3x + 2$

55. contains the point $(4, 10)$ and is parallel to the line $y = 3x + 1$

56. contains the point $(3, 6)$ and is perpendicular to $y = \dfrac{-3}{2}x + 1$

Find the slope and y-intercept for each linear equation.

57. $y = 2x - 5$

58. $2x - 3y = 9$

59. $x - 2y = 10$

Tell if the given point is on the line.

60. $(2, 1)$; $y = 2x - 3$

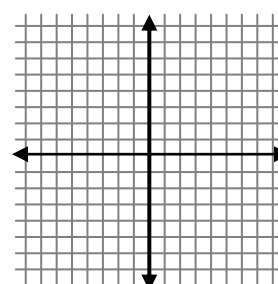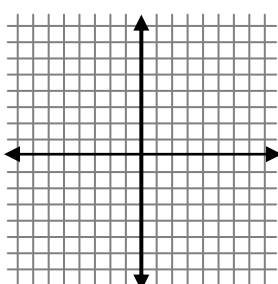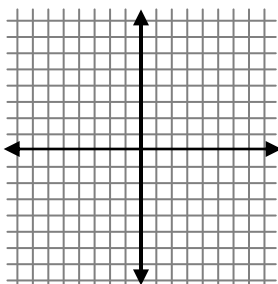61. $(1, -1)$; $y = 7x - 6$

62. $(0, 3)$; $2x + y = 4$

Graph each equation.

63. $y = 2x - 3$

64. $y = \dfrac{-1}{3}x + 1$

65. $2x - y = 5$

Write the linear equation to represent each graph.

66.

67.

68.

Ebuen 4