Unit 1 Finals Review

Concept 1.1: Order of Operations:

1. $15 \div 5 + 2 - (5+3)$

2. $4 - \left[8 - (2-5)^2 \right]$

Concept 1.2: Number Sets Closure

3. Classify the following Numbers (Counting (natural), Whole, Integers, Rational, Irrational)

   a. 7

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

   c. $\sqrt{2}$

4. Are negative integers *closed* under subtraction? If no, provide a counter-example.

5. Are Counting numbers *closed* under subtraction? If no, provide a counter-example.

Concept 1.3: Solving Equations:

6 $8x - 2(4x+3) = 9$

7. $4y - (y-4) = -20$

8. $\frac{1}{5}(10x-5) = 4x - (2x+1)$

9. $-\frac{4}{5}d + 5 = -9$

10. $10 - 2z = 8 - (3z+2)$

11. $3x - 7 + 4x = 6x - 7 + x$

Concept 1.4: Solving Proportions:

12. $\frac{x-5}{-3}=-\frac{2x}{8}$

Concept 1.5: Solving Percent Problems:

13. What is 20% of 30?

14. 75 is 30% of what number?

Concept 1.6: Solving Literal Equations:

Solve for y:

15. $-2x+y=-3$

Solve for x:

16. $-3x+6y=18$

Solve for P:

17. $2P-K=C$

Concept 1.7: Solving with Square Roots:

18. $x^2 = 121$

19. $4x^2-25=75$

Unit 2 Finals Review

Concept 2.1: Solve Absolute Value Equations:

20. $7|n+5|=28$

21. $3|6-3x|-18=-9$

Concept 2.2: Solve Linear Inequalities, write answers in Interval Notation, and Graph:

22. $x-3(1-4x)\le -81$

23. $54\ge -6(3+6r)$

24. $4(-2+4n)<12+16n$

Inequality notation:

Interval notation:

Inequality notation:

Interval notation:

Inequality notation:

Interval notation:

Concept 2.3: Solve Compound Inequalities (Inequality & interval notation) then graph:

25. $10+12n<70$ or $-3+5n\le -13$

26. $-79<7k-9\le 12$

Inequality notation:

Interval notation:

Inequality notation:

Interval notation:

Unit 3 Finals Review

Concept 3.1: Definition of a Function:

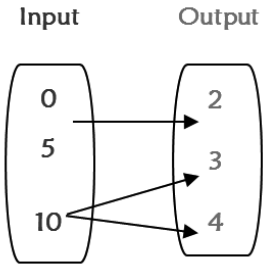
27. What is the definition of a function?

28. Which of the following are functions?

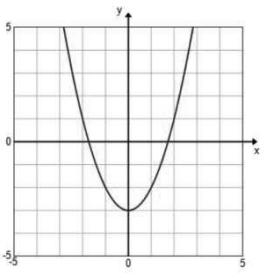
a.

Input	Output
1	4
2	8
2	3
4	12

b.



c.



Concept 3.2: Evaluating a Function:

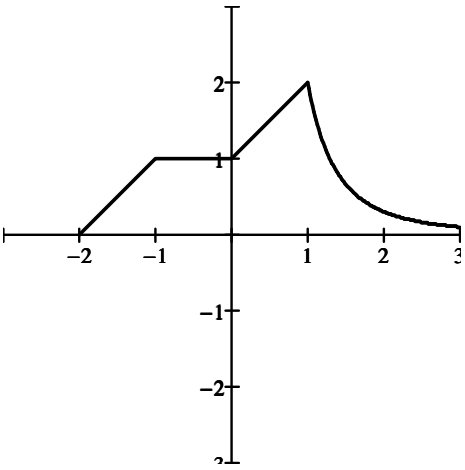
29. Find f(-4).

$f(x) = -2x - 5$ *when* $x = -4$

30. Find x.

$f(x) = -3x^2 + 2$ *when* $f(x) = -25$

Concept 3.3: Evaluating a function graphically:



31. a(1) =

32. a(-2) =

33. Find x when a(x) = 2

34. Find x when a(x) = 0

Concept 3.4: Find the slope between two points:

Find the slope of the line and identify the line as horizontal, vertical, or diagonal.

35. (2, -4) and (2, -3)

36. (-3, -6) and (3, 2)

Find the value of y so that the line passing through the given points has the given slope.

37. $(5, y), (9, 7); m = -\frac{5}{4}$

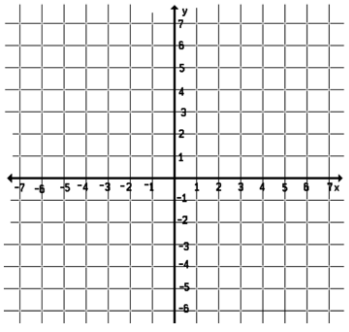
Concept 3.5: Find the x and y intercepts of an equation:

38. $5x - 8y = 40$

39. $y = 2x - 5$

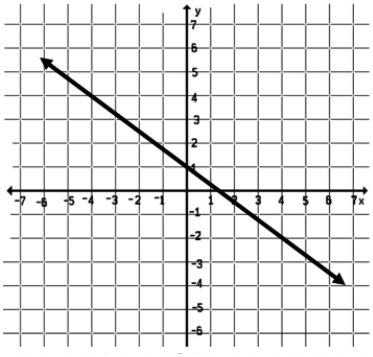
Concept 3.6: Graph a vertical or horizontal line:

40. Graph x = 3 and y = -4 on the same graph



Concept 3.7: Identify the slope and y intercept from a graph or equation:

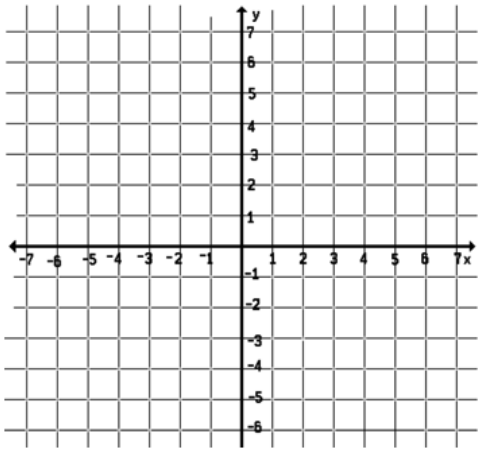
41. Write the equation of the given line:



Concept 3.8: Graph from slope intercept form, point slope form, or using intercepts (standard):

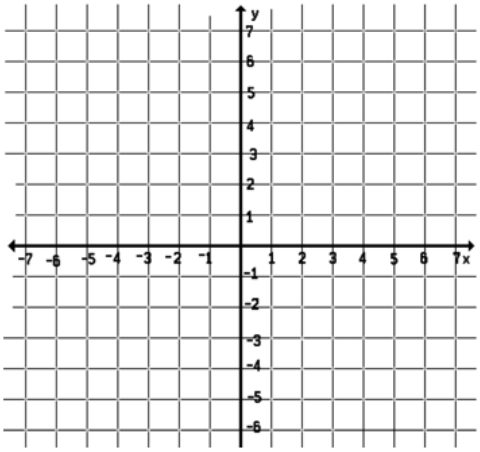
42. $y = -\frac{3}{2}x - 3$

m = _____ b=_____



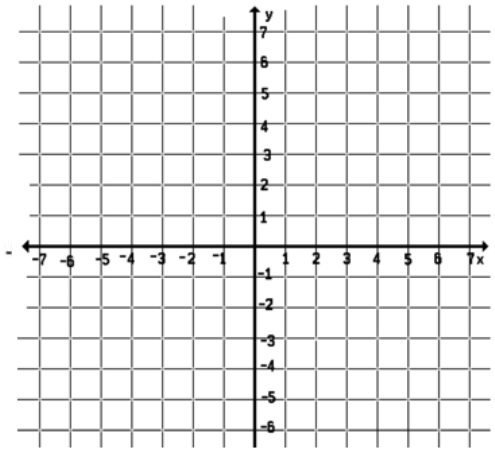
43. $4x - 3y = 18$

m = _____ b=_____



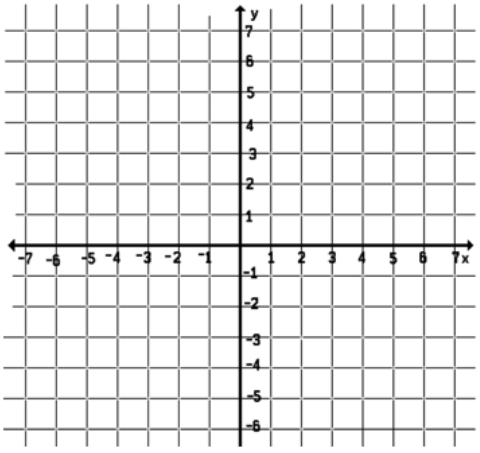
44. $y + 3 = -\frac{3}{2}(x - 5)$

m = _____ pt=_____



45. $y - 5 = -3(x - 6)$

m = _____ pt=_____

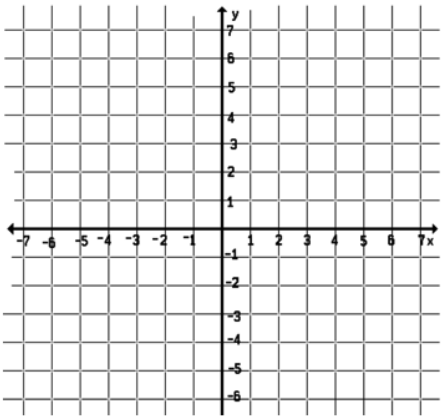


Graph using the INTERCEPTS METHOD.

46. $-3x - 6y = -18$

x-int: _____

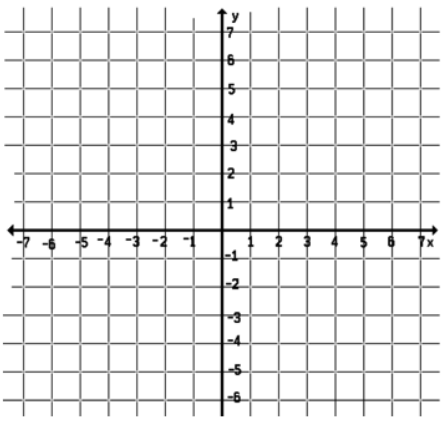
y-int:_____



47. $5x - 4y = 20$

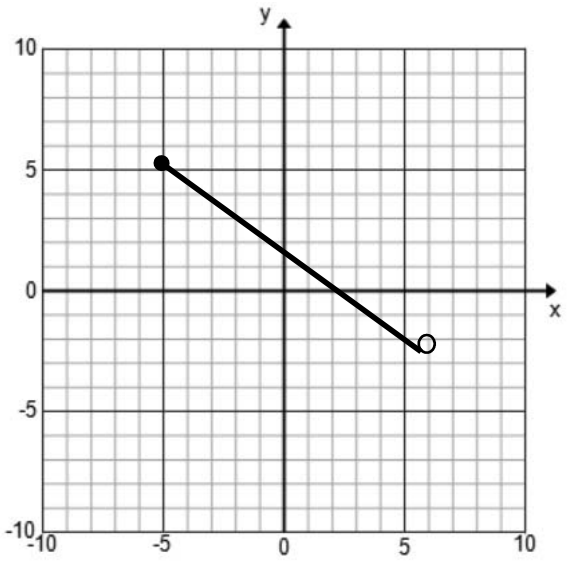
x-int:_____

y-int:_____



Concept 3.9: Recognizing Domain and Range Graphically:

48. State the Domain and Range of the given graph:



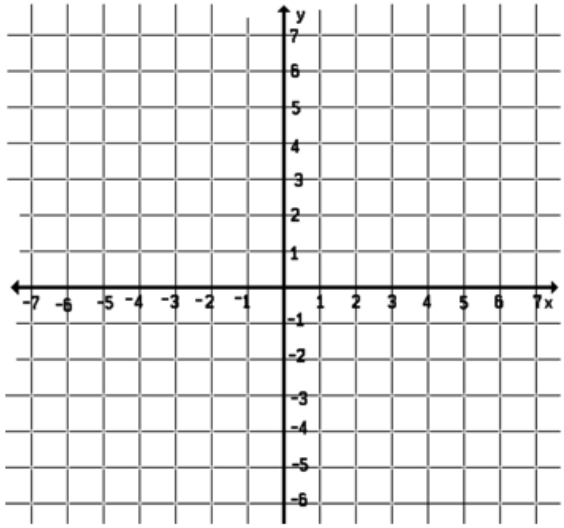
Inequality: **Interval:**

Domain: _____ _____

Range: _____ _____

49. Graph: $y = -\frac{1}{3}x + 4$ *with domain*: $x > 3$

Then state the resulting range:



Range: _____

_____

Unit 4 Finals Review

Quick Mental Check

- slope formula: _____
- slope intercept form : _____
- point – slope form: _____
- The slope of a vertical line is _____
- The slope of a horizontal line is _____
- To find a y intercept _____
- To find an x intercept _____

Concept 4.1: Write an equation in Slope Intercept Form

50. Write an equation of the line that passes through (6,-5) with a slope of $\frac{3}{2}$

51. Write an equation of the line that contains (-6, 2) and (-2, -10) in slope-intercept form.

Concept 4.2: Write an equation in Point Slope Form

52. Write the equation of a line that contains (4, 7) and (-3, -6) in point-slope form:

Concept 4.3: Write an equation in Standard Form

53. Write the equation of the line $y-3=\frac{3}{4}(2x-3)$ in standard form.

54. Write the equation of the line in standard form given that it runs though (-2, 2) and (-4, -6)

Concept 4.4: Writing Equations of Parallel and Perpendicular Lines

Are lines a and b parallel, perpendicular, or neither?

55. Line a: $y = -5x + 3$
Line b: $y - 5x = -2$

56. Line a: $-5x + y = -3$
Line b: $-2x - 10y = 20$

57. Write the equation of the line that is perpendicular to $-5x-15y=-3$ and passes through the point (-1, 4) in slope-intercept form.

Concept 4.5: Solve Linear Applications

58. Mr. Griffin's beard grows at a rate of 3 centimeters per week. He started with a beard that was 2.5 centimeters long (crazy how it just started that way, right?). At this rate, how long with his beard be after 2 months? (be careful with units)

a. Write a linear equation

b. predict the length of his beard after 2 months

59. In 2000, people charged $1,243 billion on the four most used types of credit cards. In 2005, people charged $1,838 billion on these same four credit cards.

a. What is the rate of change?

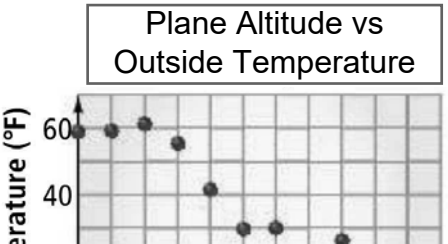
b. Write a linear equation that represents this scenario (*slope intercept form)*.

c. How much would you predict people to spend in 2015.

d. In what year would you predict the amount spent to be $2490 billion.

Concept 4.6: Calculate a Line of Best Fit and Make Pred

60. Write a sentence that describes the correlation of the



scatter plot:

61. a. Given the data set to the write, use your calculator to calculate the linear regression (line of best fit)

Weight of a Panda

Age (months)	Weight (lb)
1	2.5
2	7.6
3	12.5
4	17.1
6	24.3
8	37.9
10	49.2
12	54.9

a. What does the slope represent?

b. What would you predict the weight of the Panda to be at 7 months

c. What would you predict the weight of the Panda to be at 20 months?

d. Is your line of best fit the best a good predictor at 20 months? Why or why not?

Unit 5 Finals Review – Solving Systems

Concept 5.1: Recognize a solution to a system of Equations

62. *Is (-3, 1) a solution for the system?*

$x + y = -2$
$x + 5y = -2$

63. 2 parallel lines have _____ solution(s).

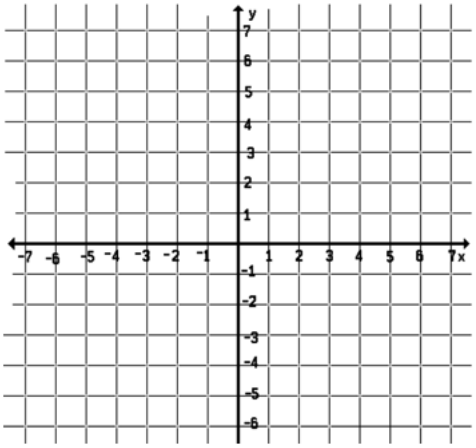
2 intersecting lines have _____solution(s).

2 equations that represent the same line have

_____solution(s).

Concept 5.2: Solve a System by Graphing

64. $x + 4y = -8$
$-x + y = -7$



Concept 5.3: Solve a System using Substitution or Elimination

Solve the system of linear equations by substitution or elimination

65. $y = 3x + 2$
$x + 2y = 11$

66. $2x - 3y = -5$
$5x + 2y = 16$

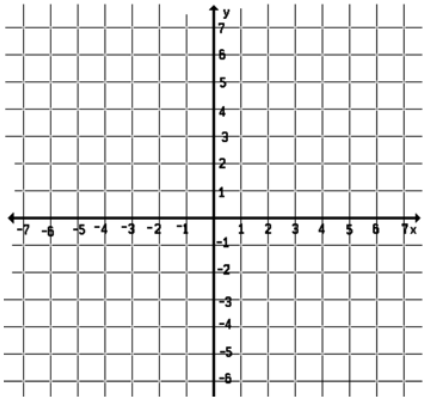
Concept 5.4: Solve Applications of Linear Systems

67. A hotel offers two activity packages. One costs $192 and includes 3 hours of horseback riding and 2 hours of parasailing. The second costs $213 and includes 2 hours of horseback riding and 3 hours of parasailing. What is the cost for an hour of each activity.

Concept 5.5: Graph a Linear Inequality

Concept 5.6 Write Equation of a Linear Inequality

68. $y < -\frac{3}{4}x - 2$



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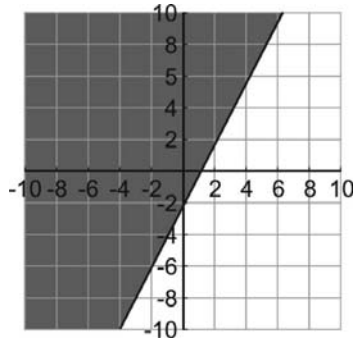


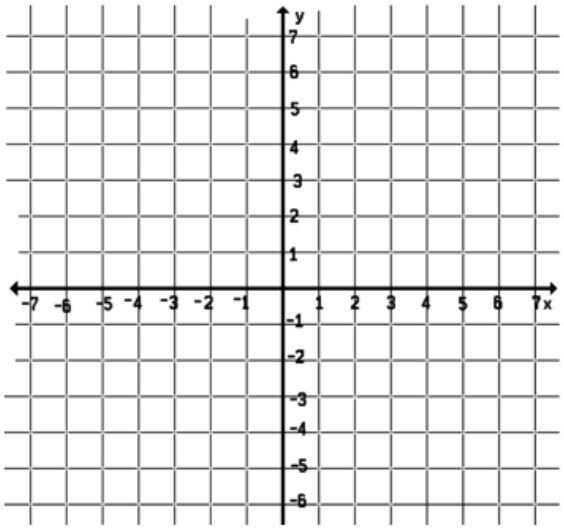
Concept 5.7: Graph a system of Linear Inequalities

Concept 5.8 Write a System of Inequalities from a graph

$y < 2x + 4$

$-3x - 2y \geq 6$

70. $y > -1$



71.