Semester Exam Review Packet

This packet is not necessarily comprehensive. In other words, this packet is not a promise in terms of level of difficulty or full scope of material.

Equations

1. $9 - 2(n - 1) = \frac{3n}{4}$

2. $\frac{2}{3}x - \frac{1}{4} = \frac{2}{3}\left(x - \frac{1}{4}\right)$

3. Cheap Company long distance phone calls cost 36 cents plus 3 cents per minute. Economy Company long distance phone calls cost 6 cents per minute. How long is a call that costs the same amount no matter which company is used? What is the cost of that call?

4. Four times a number is two less than six times the same number minus ten. What is the number?

    A   4   C   29
    B   6   D   31

Solving for a Variable

5. Solve 3x + 7y = 2 for y

6. Solve $st + 3t = 6$ for s.

Inequalities

Solve and graph the following inequalities:

7. $2.5 + 2x \geq 5.5 + 2.5x$

8. $-2(1 - x) < 3(x - 2)$

9. $\frac{1}{6}(6x + 12) - x \geq -10x + 32$

10. A 15-foot-tall cedar tree is growing at a rate of 2 feet per year beneath power lines that are 58 feet above the ground. The power company will have to prune or remove the tree before it reaches the lines. How many years can the power company wait before taking action?

11. Patty's Pizza charges $5.50 for a large pizza plus $0.30 per topping. Pizza Town charges $5.00 for a large pizza plus $0.40 per topping. Which inequality can you use to find the number of toppings x so that the cost of a pizza at Pizza Town is greater than the cost of a pizza at Patty's Pizza?
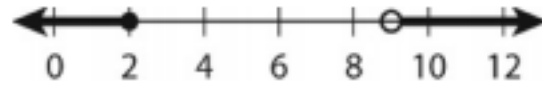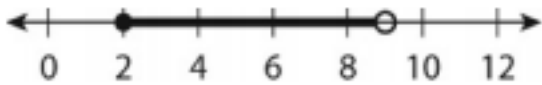
A (5+ 0.4)x > (5.5 + 0.3)x   C   5.5 + 0 .3x > 5+0.4x
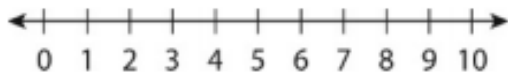B   5.5x + 0.3 > 5x + 0.4   D   5 + 0.4x > 5.5 + 0.3x

12. Write the compound inequality for each graph

13. Graph the following situation on the number line then write the compound inequality.
A welding shop figures a new welding machine will be cost effective if it runs less than 2 hours or more than 5.5 hours per day.

_____

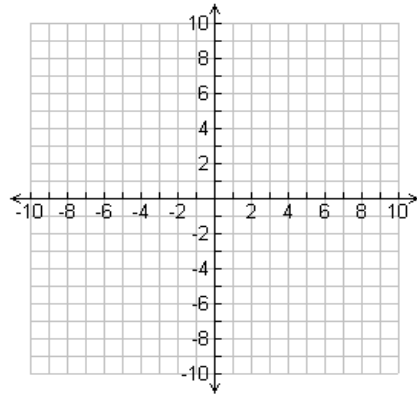14. Which compound inequality has no solution?

A. x > 1 OR x < -2   C. x < 1 OR x < -2
B. x < 1 AND x > -2   D. x > 1 AND x < -2

Functions

15. Create a table for a function.

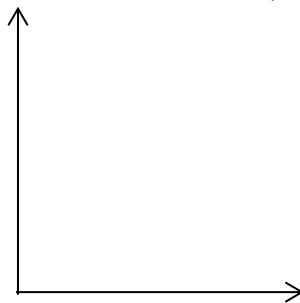| x	y

16. Create a graph that is not a function.

17. Create a Graph for this situation:

You get two movies free from Blockbuster.
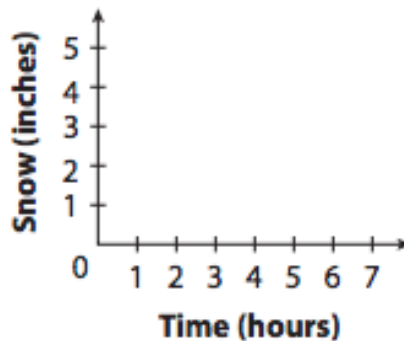Then you get charged a fixed rate per movie.

X= number of movies
Y= the total money spent in dollars

18. Create a Graph for this situation:

At the start of a snowstorm, it
snowed two inches an hour for two
hours, then slowed to one inch an
hour for an additional hour before
stopping. Three hours after the snow
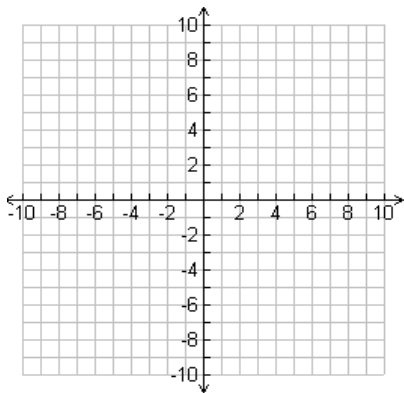stopped, it began to melt at one-half
an inch an hour for two hours.

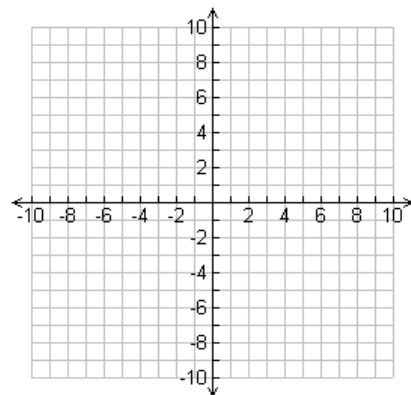For 19 and 20, make a table of values and use these values to graph the function.

19. $b(x) = 2x^2 + 1$

x	b(x)

20. $f(x) = \sqrt{x + 2}$

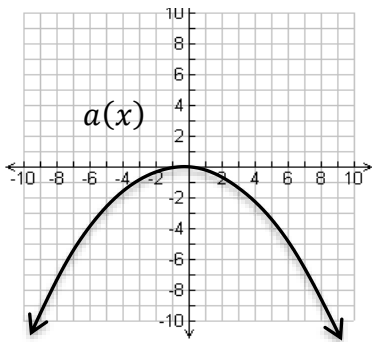| x	f(x)
-2	
-1	
2	
7	

21. You put a yam in the oven. After 45 minutes, you take it out. Let $f(t)$ be the temperature of the yam t minutes after you placed it in the oven.
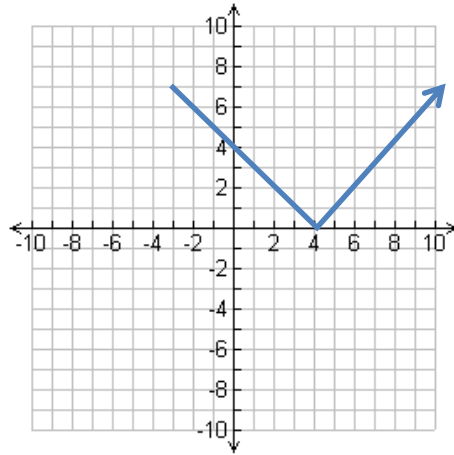
a. What does $f(0) = 65$ mean in terms of the situation?

b. What does $f(5) < f(10)$ mean in terms of the situation?

c. What does $f(40) = f(45)$ mean in terms of the situation?

22. Which is greater, $a(-6)$ or $b(-6)$?

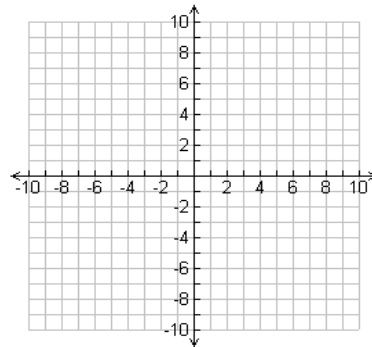$$b(x) = |x - 3| + 2$$

$a(x)$

23.

Domain:

Range:

24. Draw a graph that is increasing then decreasing and has a domain of all real numbers and a range of $y \leq 3$


25. A car can travel 30 miles on a gallon of gas and has a 20 gallon gas tank. Let g be the number of gallons of gas the car has in its tank. The function $d = 30g$ gives the distance d in miles that the car travels on g gallons.

a. What are reasonable values for the domain and range of the situation?

b. How far can the car travel on 12 gallons of gas?

26. Graph: $y = -\frac{6}{5}x$ 27. Graph: $3x = 18 + 4y$ 28. Graph: $y + 2 = -3(x - 1)$
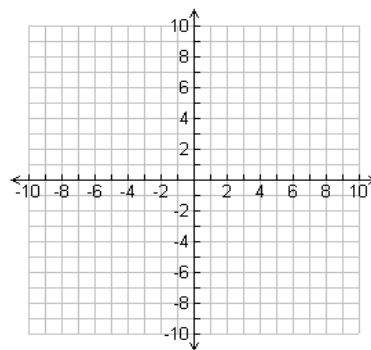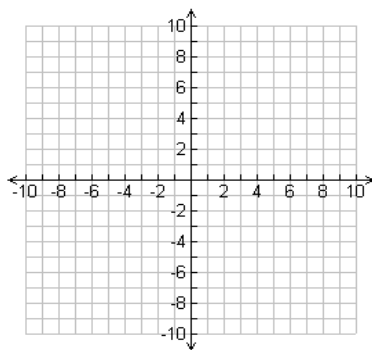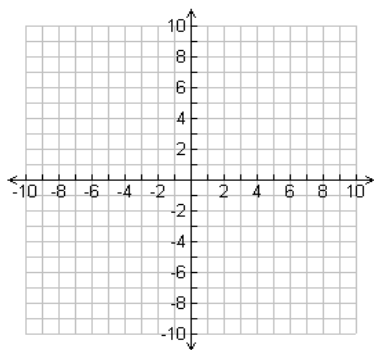
29. The line through A(1, -3) and B(-2, d) has a slope of -2. What is the value of d?

     A $-\frac{3}{2}$ C 5

     B -1   D 3

30. Find the equation for the line between points (-2, 4) and (6, 8)
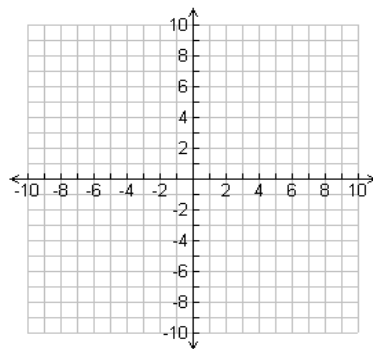
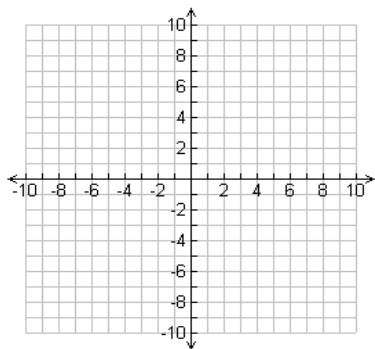31. Find the x and y intercepts for 4x + 2y = 10

Linear Inequalities

32. Which point is a solution of the inequality y > -x + 3?
     A. (0, 3)   C (-1, 4)
     B. (1, 4)   D (0, -3)

33. Graph: $y < -\frac{2}{3}x$ 34. Graph: $x \geq 4$

Exponents

35. $\dfrac{60b^0 b^3 a^6 e^2}{4a^6 e^{-2}}$ 36. $\left(\dfrac{2c^{-3}a^4}{a^{10}}\right)^2$ 37. $-6^2 \cdot 2^{-2}$
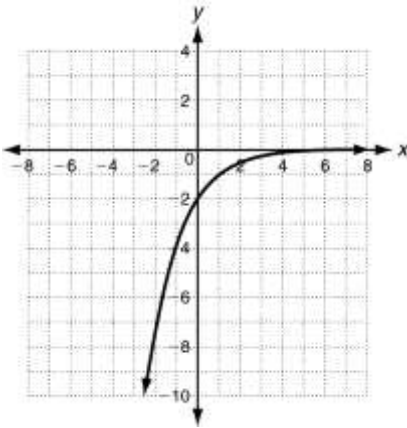
Exponentials

Write the equation for each chart.

38.

x	f(x)
-2	0
-1	2
0	4
1	6
2	8

39.

x	f(x)
-2	5/9
-1	5/3
0	5
1	15
2	45

40. The graph of which function is shown below?

A $\quad y = -2(2)^x$ C $\quad y = 2(2)^x$

B $\quad y = -2\left(\frac{1}{2}\right)^x$ D $\quad y = 2\left(\frac{1}{2}\right)^x$

41. What is the domain and range of the graphed function?

42. The value of a car can be modeled by the function $g(t) = 22500(0.554)^t$, where **t** is the number of years. Describe what is happening with the value of the car, using both numbers from the function in your explanation.

43. Suppose 6,700,000 people watch the first episode of "Keeping Up with the Kardashians", but the number of viewers decreases by 3.5% each week.

a. Write an exponential function to model the situation.

b. If the pattern continues, how many will watch the season finale, which is ten weeks later?

44. Jane's credit card company charges 20% interest per year, compounded quarterly. If Jane's credit card bill was originally $775, how much will the bill be after 4 years if she doesn't pay it off? Round your answer to the nearest cent.

Sequences

45. Find the 27th term of the sequence: $a_1 = 4;$ $a_n = a_{n-1} + 9$

46. Find the first 4 terms of the sequence $f(n) = -2n - 6$

47. The odometer on a car reads 60,473 on day 1. Every day, the car is driven 54 miles. If this pattern continues, what is the odometer reading on day 20?

48. The 60th term of an arithmetic sequence Is 106.5 and the common difference is 1.5. Find the explicit and recursive rule for the sequence.

49. The 10th term of a geometric sequence is 20. The common ratio is -0.5. Find the explicit and recursive rule for the sequence.
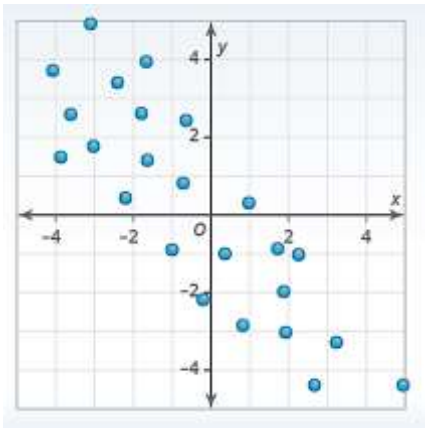
Data

50. Describe a situation where you would expect to see a negative correlation in a scatterplot.

For each scatter plot, choose the value of the correlation coefficient "r" that most matches the scatter plot.

51.

A) -0.8
B) -0.3
C) 0
D) 0.3
E) 0.8

52.

A) -0.9
B) -0.2
C) 0
D) 0.2
E) 0.9
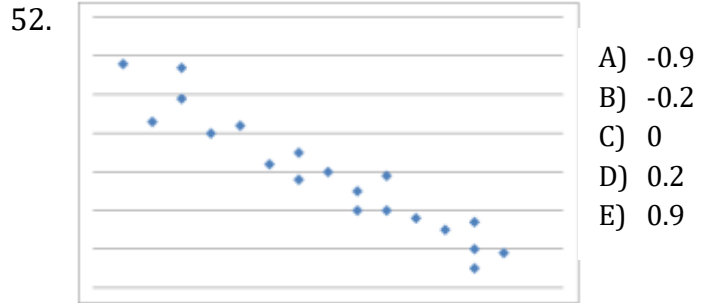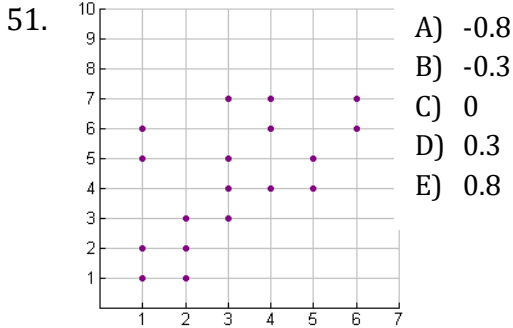
53. Which of these would be the most appropriate line of best fit for the scatter plot?

A. $y = x + 0.3$ B. $y = -\frac{1}{3}x$

C. $v = -x - 0.3$ D. $v = -3x - 1$

54. The scatter plot compares the average daily temperature on a given day with the number of beach visitors. About how much does the number of visitors increase per degree Fahrenheit?

A. 15 visitors per ºF   B. 60 visitors per ºF
C. 40 visitors per ºF   D. 5 visitors per ºF

Beach Visitors
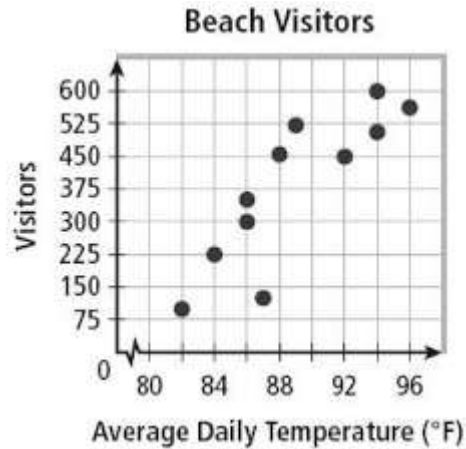
55. Describe a few good strategies for multiple choice tests.