

Name: \_\_\_\_\_

/50

You may not use anything except a pencil and a scientific calculator for this test; clear off any other items from your desk. Read the directions on each problem, they are meant to help you :). Show your work for each step of the problem, no work equals no credit. The problems on this test vary in complexity and length, so use your time wisely. Work on the problems you know how to do to start and go back to the harder ones later. You have one hour to complete this test, GOOD LUCK!!

Fill in the blank with the correct vocabulary word.

1. (1pt) If the value of  $a$  changes in response to the value of  $b$ , then  $b$  is the \_\_\_\_\_.
2. (1pt) The graph of a(n) \_\_\_\_\_ is a function whose graph is a nonvertical line or part of a nonvertical line.
3. (2pts) A \_\_\_\_\_ is a graph that is unbroken. A \_\_\_\_\_ is composed of distinct, isolated points.
4. (2pt) A relation is a pairing of numbers in one set (the  $x$ -values) called the \_\_\_\_\_, with numbers in another set (the  $y$ -values) called the \_\_\_\_\_.

Write a function rule to represent each situation.

5. (3pts) 2.5 more than the quotient of  $h$  and 3 is  $w$ .
6. (3pts) A bottle holds 48 tsp of vanilla. The amount  $A$  of vanilla remaining in the bottle decreases by 2 tsp per batch  $b$  of cookies. Write a function rule to represent this situation. How much vanilla remains after 12 batches of cookies?

Using the table, determine whether the relationship is a linear function. Identify the X and Y variables. Then represent the relationship using words and an equation.

7. (5pts)

Number of Snacks Purchased, $s$	Total Cost, $C$
0	\$18
1	\$21
2	\$24
3	\$27

X Variable:

Y Variable:

**Words:**

**Equation:**

Use a mapping diagram to determine whether each relation is a function

8. (2pts)  $\{(1,7), (9,4), (3,-2), (5,3), (9,1)\}$

Function? Yes or No

9. (2pts)  $\{(2,5), (3,6), (3,-2), (5,-4), (6,8)\}$

Function? Yes or No

10. (10pts) The domain of  $t(x) = -3.8x - 4.2$  is  $\{-3, -1.4, 0, 8\}$ . What is the range? (remember to write the values in increasing order)?

x	$t(x) = -3.8x - 4.2$	$(x, t(x))$
-3		
-1.4		
0		
8		

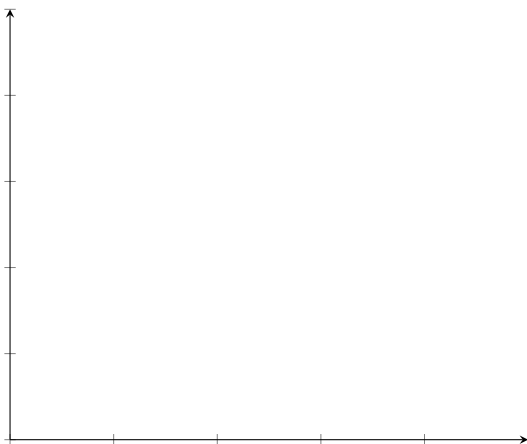
The range of the function is { }

Evaluate each function for  $x = 7$ .

11. (3pts)  $f(x) = 2x - 8$

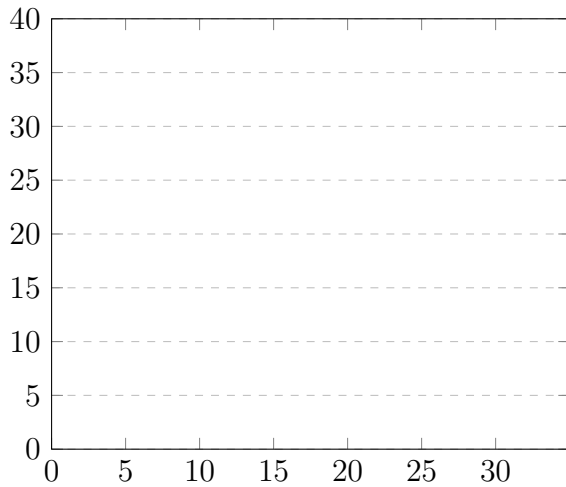
12. (3pts)  $h(x) = -4(x) + 61$

13. (3pts) Sketch a graph to represent the situation. Label your axes.  
Your pulse rate as you watch a scary movie.



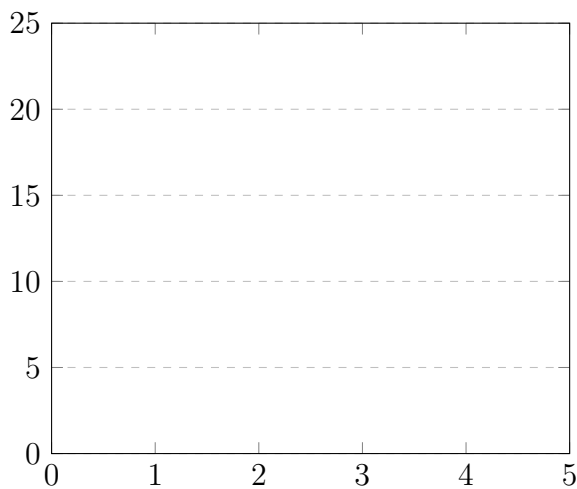
Graph the function rule and label your axes. Explain why the graph is continuous or discrete.

14. (5pts) A burst pipe fills a basement with 37 in. of water. A pump empties the water at a rate of  $1.5\text{in}/h$ . The water level  $l$ , in inches, after  $t$  hours is represented by  $l = 37 - 1.5t$ .



The graph is continuous because there can be any amount of water in the basement as they work to remove it.

15. (5pts) The total height  $h$  of a stack of cans is a function of the number  $n$  of layers of 4.5in. cans used. This situation is represented by  $h = 4.5n$ .



The graph is discrete because only whole numbers of layers make sense.