Modeling HW Quiz 1C   Name_____
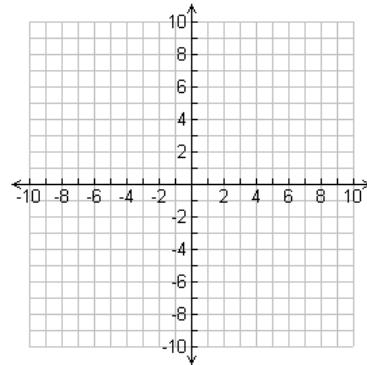
1. For the following function: evaluate the given function and then write your problem in terms of (x, y). Plot the points and connect.

   Let $g(x) = 8 - 3x$

   a. g(-1) =

2. For each of the following, find the value of x given the value of y.   Let $h(x) = 8 - 3x$

   a.   *h(x) = 4*

3. Write the first 5 terms for the sequence

   a. $a_n = a_{n-1} + 10$ $a_0 = -3$ b. $a_{n+1} = a_n + 2$ $a_1 = 12$

4. *Given the table below write a **function/explicit rule**.*

x	0	1	2	3	4
y	-3	-1	1	3	5

Function Rule_____   Recursive Rule_____

Find the missing terms for the arithmetic sequence and state the common difference, then give the recursive rule.

5.   -12, _____, _____, _____, 4, _____

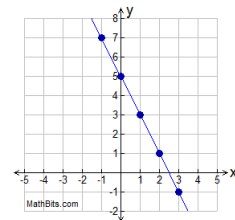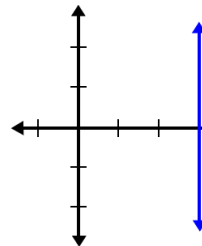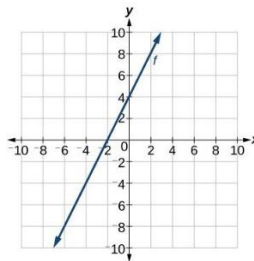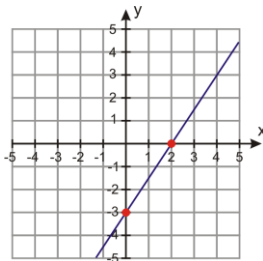Common difference: _____   Recursive Rule_____

6. Match the graph to the equation

   I. x = 3   II. y = -2x + 5   III.   y = 2x + 4   IV. $y = \dfrac{3}{2}x - 3$

7. A rental car company charges $30 plus $.10 per mile to rent a car. The **cost, C (in dollars)** would depend on the **number of miles driven, m**, according to the rule $C = 30 + .10m$

a. Use the function rule to complete this table of sample (n, C) values:

#of miles driven (m)	0	1	2	3	4	5	10	20	50
Cost(C)									

b. How much will the car rental cost if they don't drive the car at all?

c. How much does each mile driven cost?   **d.** Write a recursive rule for the situation

8. Some cleaning companies have their employees go door to door to sell their products. Tim earns a base salary plus a commission on each sale. His weekly earnings depend on the number of cleaning products he sales as shown in the table

Number of Cleaning Products Sold	4	6	8	10
Weekly Earnings (in dollars)	1000	1400	1800	2200

a. Determine the rate of change in earnings as sales increase.

b. What would Tim's earning be for a week in which he sold zero cleaning products?

c. Use your answers from part a and b to write a rule in function form.

d. What would Tim's weekly earning be if he sold 30 cleaning products?

9. **Buying on Credit** Best Buy is offering 0% interest for 36 months on purchases made using a Best Buy store credit card. Emily purchased a Sony - 65" Class (64.5" Diag.) - LED - 2160p - Smart - 4K Ultra HD TV with High Dynamic Range **for $2400** using a Best Buy store credit card. Suppose she pays the minimum monthly payment of $50 each month for the first 36 months.

**a.** Complete a table of (*number of monthly payments, account balance*) values for the first 6 months after the purchase.

Number of Monthly Payments	0	1	2	3	4	5	6
Account Balance (in dollars)							

b. Will Emily pay off the balance within 36 months? Explain.

c. Determine the rate of change, including units, in the account balance as the number of monthly payments increases

**d.** What was the starting account balance for the situation?

e. Write a recursive rule for the situation above.   **f.** Write a function rule for the situation above.

a.

The Ant and the Sugar

Distance from opening in wall (in feet) vs Time (in seconds)
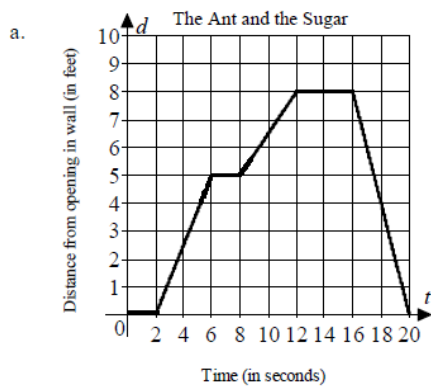
10.   Find the average rate of change of the Ant for time $t = 16$ to $t = 20$.

11.   Find the average rate of change of the Ant for time $t = 2$ to $t = 16$.

12. Find the slope and y-intercept of the line given in the graph below.
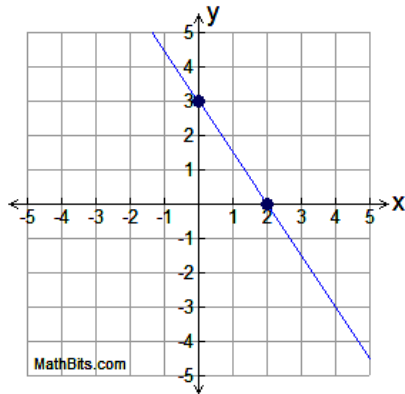
13. Find the slope and y-intercept of the line given the table below

x	-15	-12	-9	-6	-3
y	15	19	23	27	31

14. Find the slope of the line given 2 points in coordinate form.

a) $(-5, 9)$ *and* $(3, 12)$ b) $(-2, 7)$ and $(6, -7)$

15. Determine the slope and y-intercept of the equation: $y = -12x + 7$

16. Given the slope and y-intercept write the equation: Slope = -5   y-intercept = 12

17. Determine if the tables/graphs/and equations represent a linear function by answering yes or no. If the table/graph or equation is linear give the slope.
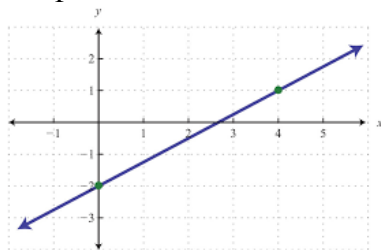
Table   A

X	2	4	6	8	10
y	5	4	3	2	1

Table B

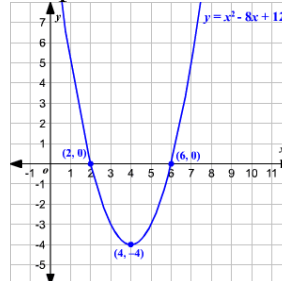| X	1	4	7	10	13
y	9	11	12	16	17

c) $y = 10x + 6$

d) $y = 2x^3 + 5x$

Graph E

Graph F

18. For the spring complete the questions below.

Weight, W	0	5	10	15	20	25
Length, L	20	18	16	14	12	10

a. Starting Length of spring: _____   b. Rate of change of length to height:_____

c. Function Rule: _____   d. Recursive Rule: _____

Solve the following equations or inequalities for x.

19) $5(x - 3) = 5x + 3x - 21$

20) $\dfrac{x+10}{5} = \dfrac{6}{3}$

21) $-5(3x + 2) < 6(2x + 9)$