First name: _____ Last name: _____ Student ID: _____

Chapter 4 Linear and Non–Linear Relations (2) Homework

1. a) An equation of the form $y = ax + b$ has what kind of graph?

b) An equation of the form $Ax + By + C = 0$ has what kind of graph?

2. What characterizes a *linear* equation?

3. Which of the following are linear equations?

a) $y = 4x - 5$ b) $2x - 3y + 8 = 0$ c) $y = x^2 - 2x + 1$

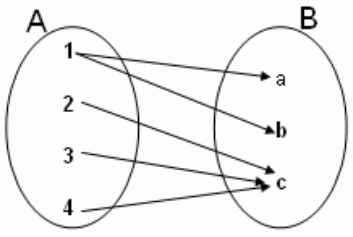
d) $3x + 1 = 0$ e) $y = 6x + x^3$ f) $y = 2$

4. Determine if the relation is a function. Determine the domain and range for each.

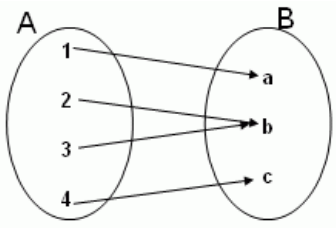
a) {(3, 4), (4, -6), (5, -7), (19, 4), (-2, 5)} b) {(-3, 4), (-2, 5), (0, 0), (-2, 11), (4, 8)}

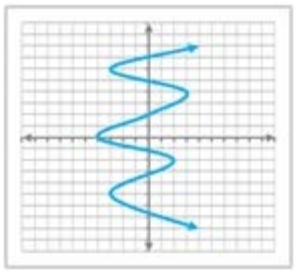
5. Determine if the relation is a function.

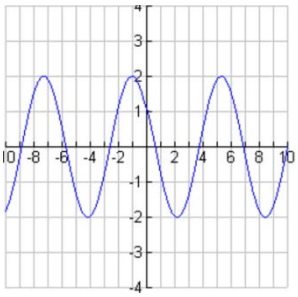
a)



b)



c) 

d) 

6. Does each situation represent direct variation or partial variation?

a) Lily is paid $5 per hour for raking leaves.

b) The printing of brochures costs $250, plus $1.25 per brochure.

c) Jordan is paid $30 per day, plus $2.00 for every magazine subscription he sells.

7. Does each equation represent a direct variation, a partial variation, or neither?

a) $C = 4n + 30$ b) $P = 4s$ c) $d = 65t$

d) $d = 400 - 85t$ e) $y = x^2+5$ f) $y = 4x^2$

8. Alan works part-time at a gas station. He earns $10/h. His pay varies directly with the time, in hours, he works.

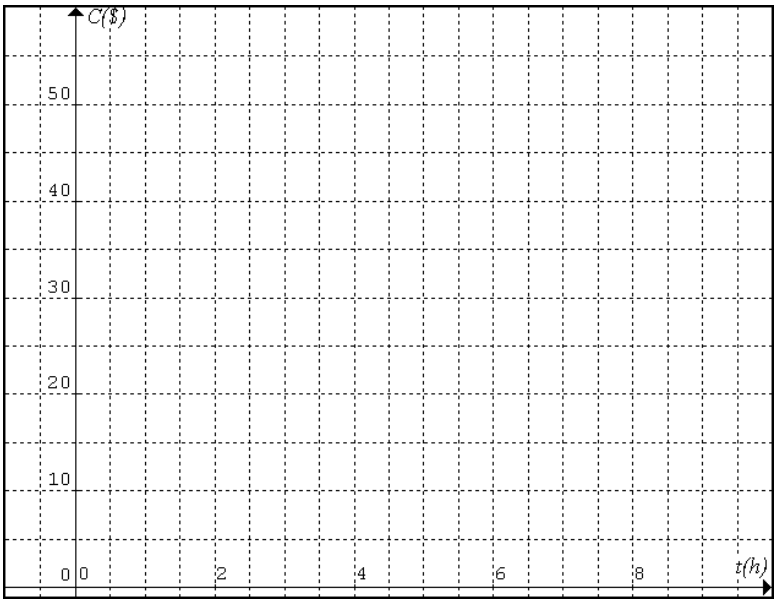
a) Choose appropriate letter for variables. Complete the blanks. Circle the correct type of variable

Let *t* be _____. Independent or Dependent?

Let *C* be _____. Independent or Dependent?

b) Make a table of values showing Alan's pay for 0 hours, 1 hour, 2, 3,4, and 5 hours.

c) Graph this relationship. Are you going to connect the dots?



d) Is the graph linear? YES/NO

e) Does the graph pass through (0, 0)? YES/NO

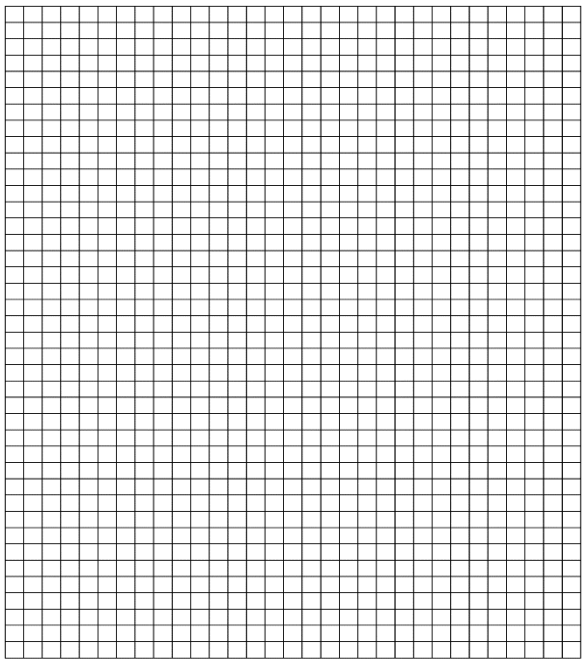
f) Write an equation in the form C = *k* t. What does *k* represent?

g) Is it Direct or Partial Variation?

9. The cost of a banquet Hall is $450 for the room rental, plus $15 for each person served.
   a. Write an algebraic expression for the total cost, C. Define all your variables.

b. Create a table of values to represent the relation between the number of people and the cost. Then, plot the points.

Number of People - x	**Cost ($) - y**
0	
10	
20	
30	
40	
50	
60	



c. From the graph you draw, predict the cost when the number of people reaches 45. Then use the algebraic formula and the TOV to predict the cost again.

d. What is the shape of this scatter plot? Should we connect all data points?

e. What kind of variation is this? What is the fixed cost and what is the variable cost?