Math 3 Name:_____

MP2 Long-term #3

Date:_____

6 Some of the best vacuum cleaners are only sold door-to-door. The salespeople demonstrate the cleaning ability of the appliance in people's homes to encourage them to make the purchase. Michael sells vacuums cleaners door-to-door. He earns a base salary plus a commission on each sale. His weekly earnings depend on the number of vacuum cleaners he sells as shown in the table below.

Michael's Earnings

Number of Vacuum Cleaners Sold in a Week	2	4	6	8
Weekly Earnings (in dollars)	600	960	1,320	1,680

a. Verify that weekly earnings are a linear function of the number of vacuum cleaners sold.

b. Determine the rate of change in earnings as sales increase. What part of Michael's pay does this figure represent?

c. What would Michael's earnings be for a week in which he sold 0 vacuums?

d. Use your answers to Parts b and c to write a rule that shows how Michael's weekly earnings E can be calculated from the number of vacuum cleaners sold in a week S.

e. Company recruiters claim that salespeople sell as many as 15 vacuum cleaners in a week. What are the weekly earnings for selling 15 vacuum cleaners?

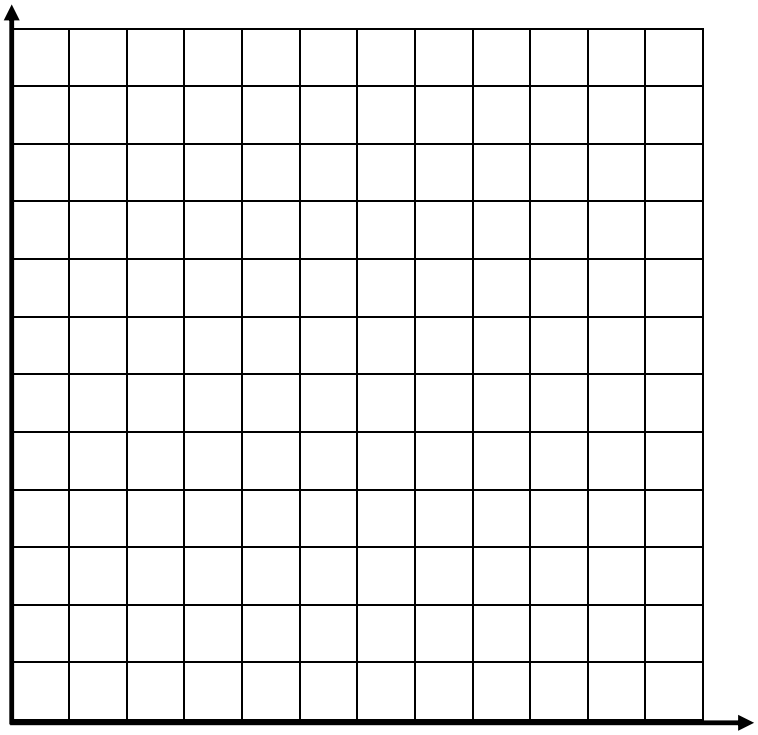
10 The Riverdale Adventure Club is planning a spring skydiving lesson and first jump. Through the club newsletter, club members were asked to take a poll as to whether or not they would purchase a video of their jump for various prices.

The results of the poll are shown in the table below.

Cost (in dollars)	25	30	35	40	50	60	75
Number of Buyers	93	89	77	71	64	55	38

a. Create a linear model for the (*cost*, *number of buyers*) data. Represent your linear model as a graph and as a function rule.

RULE: _____



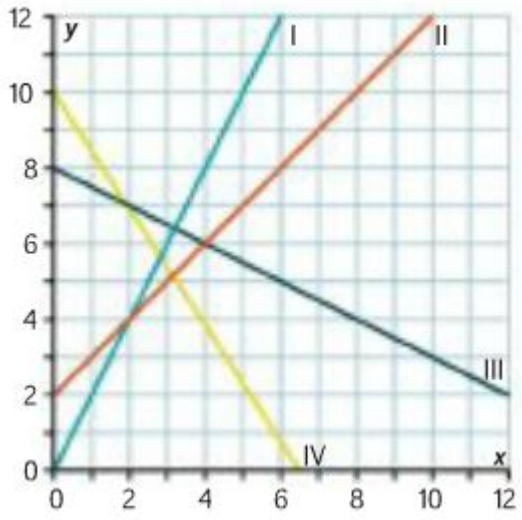
b. Use your linear model from Part a to predict the number of members who would purchase a video of their jump for $45. For $70. For $90. For $10. Which estimates would you most trust? Why?

c. Should you use your model to predict the number of buyers if videos cost $125? Why or why not?

d. For what cost of a video would you predict 50 buyers? 75 buyers? 100 buyers?

16 The diagram at the right shows four linear graphs. For each graph I–IV, do the following.

a. Find the rate at which y changes as x increases.



Graph I:

Graph III:

Graph II:

Graph IV:

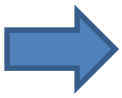
b. Write a *NOW-NEXT* rule that describes the pattern of change shown by the graph.

Graph I: NEXT =_____

Graph II: NEXT =_____

Graph III: NEXT =_____

Graph IV: NEXT =_____



c. Write a rule for calculating y as a function of x.

Graph I: y =_____

Graph II: y =_____

Graph III: y =_____

Graph IV: y =_____

d. Explain how your answers relate to each other.