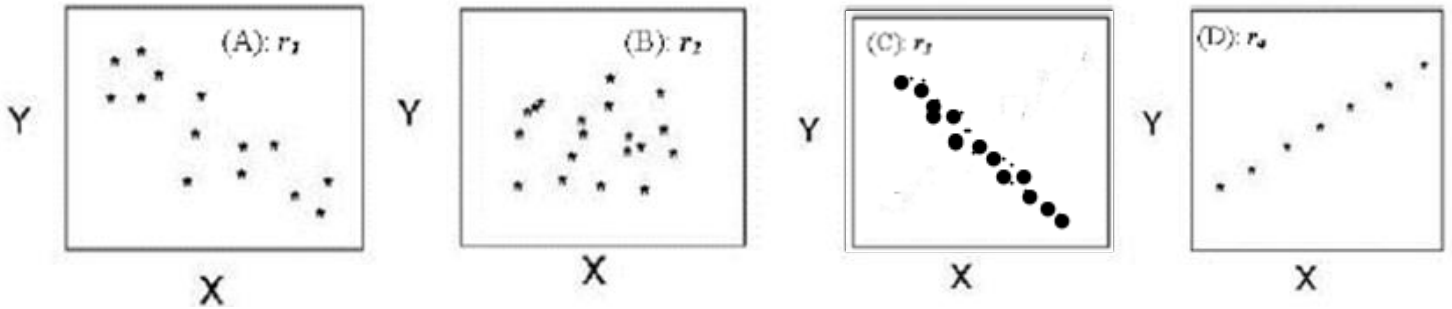


**Unit 4\_5 Test Review**

1. For each of the following, determine if it is *strong/weak/no correlation* and *positive/negative*. Then estimate a correlation coefficient ( $r$ ) using the following:  $r = -.976$ ,  $r = 0.451$ ,  $r = 1$ ,  $r = -.762$



2. For each of the following, determine if the statement indicates a correlation or a causation. Also determine if the relationship would be positive or negative

- a) The more hours Erica works at her hourly pay job, the more money she makes.
- b) The temperature outside and the amount of clothes you are wearing.
- c) The more baseball games being played, the more pool drownings that occur.
- d) The more cousins a person has, the better golfer they are.
- e) The more Pamela studies for her test, the better grade she will get.

3. Jack's cell phone company charges a flat fee of \$8 to turn on text messaging and then 10 cents per text message after that.

- a. Write a recursive rule for this information
- b. Write an explicit rule for this information
- c. How much will Jack be charged is he makes 200 text messages this month?
- d. If jack's bill was \$35 how many text messages did he send?

4. Erin is saving up money for a new macbook for college. She has \$400 saved right now. Her parents said that they will help her by giving her 10% each month of what she has saved.

a. Write a recursive rule for this information.

b. Write an explicit rule for this information

c. How much money will she have saved in 13 months?

d. If she set aside \$125 every month, how many months would it take her to earn at least \$1399 to buy the macbook?

5. You bought a car that is depreciating in value by 9% each year. The car initially cost you 18,889. How much will it be worth in three years?

6. Below is a table that represents the cost of Tony's cell phone bill and how many minutes he talked.

a. What regression model best describes this data?

b. Calculate the regression equation for this data.

c. Use your regression equation to determine how much it would cost if Tony talked for 65 minutes.

d. If he paid \$60, about how many minutes did Tony talk for?

<b>minutes</b>	<b>cost</b>
0	\$35.00
4	\$36.00
16	\$39.00
20	\$40.00
28	\$42.00
32	\$43.00

7. In the movie contagion, the virus spread rapidly. The table below shows the spread of the virus over the first 5 days. Let's assume we are only looking at the population of a small city of 30,000 people.

a) Which regression model should you use for the first 5 days shown in the table below?

b) Write the formula of the regression model you used

c) Use your regression model to determine the number of people infected by the 8<sup>th</sup> day.

d) Is this a good model to use for the 8<sup>th</sup> day? Why or why not?

e) What can you predict about the outbreak?

f) Sketch a graph of what the *total* spread of the outbreak will look like.

Day	Total infected
1	2
2	10
3	40
4	120
5	550

8. Plot the information below and sketch the graph

Price (Thousands of \$)	160	180	200	220	240	260	280
Sales of New Homes This Year	126	103	82	75	82	40	20

- a.
- Xmin=
  - Xmax=
  - XSc1=
  - Ymin=
  - Ymax=
  - Yscl=
  - Xres=



b. Find the correlation coefficient for each of the different models

Linear \_\_\_\_\_ Quadratic \_\_\_\_\_ Exponential \_\_\_\_\_

c. Which model would be the best? Why?

d. Write the model of the equation you picked.

- e. If the house was priced at \$215 how many sales would expect to happen that year?
- f. If 50 houses were sold how much was the house priced at?

9.

Years since 1890	0	20	40	60	80	100
Population of California (in millions)	1.21	2.38	5.68	10.59	19.97	29.76

- a. Xmin=
- Xmax=
- XSc1=
- Ymin=
- Ymax=
- Yscl=
- Xres=



b. Find the correlation coefficient for each of the different models

Linear \_\_\_\_\_ Exponential \_\_\_\_\_

- c. Which model would be the best? Why?
- d. Write the model of the equation you picked.
- e. Using this model how many people would you predict in California in 2020?
- f. At what rate is the population increasing in California? (give answer as percent)

10. DesignCo is a local tshirt company. They charge a \$25 set-up fee and \$8.50 per shirt up to 25 shirts. There is a discount if you buy in bulk. After 25 shirts the price per shirt drops to \$5.50 per shirt.

- a. How much would 16 shirts cost you?
- b. How much would 50 shirts cost you?