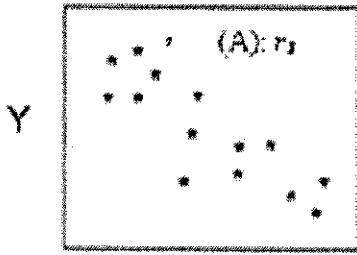


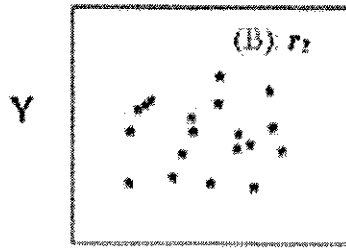
Unit 4_5 Test Review

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: $r = -.976$, $r = 0.451$, $r = 1$, $r = -.762$



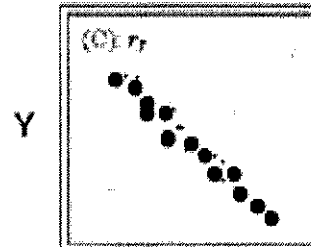
(A) $r = -.762$

WEAK NEGATIVE



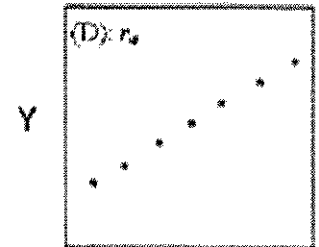
(B) $r = .451$

NO CORRELATION



(C) $r = -.976$

STRONG NEGATIVE



(D) $r = 1$

STRONG POSITIVE (PERFECT)

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.

CAUSATION POSITIVE (THE MORE YOU WORK, THE MORE YOU ARE PAID)

- b) The temperature outside and the amount of clothes you are wearing.

CAUSATION NEGATIVE (THE HOTTER IT IS, THE LESS CLOTHES YOU WEAR)

- c) The more baseball games being played, the more pool drownings that occur.

CORRELATION (MOST OF THE BASEBALL SEASON IS DURING THE SUMMER WHICH IS ALSO WHEN MOST PEOPLE GO IN POOLS)

- d) The more cousins a person has, the better golfer they are.

NO CORRELATION

- e) The more Pamela studies for her test, the better grade she will get.

CAUSATION

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

$$a_0 = 8$$

$$a_n = a_{n-1} + .10$$

- b. Write an explicit rule for this information

$$y = .10x + 8$$

- c. How much will Jack be charged if he makes 200 text messages this month?

$$y = .10(200) + 8 \quad \$ 28$$

- d. If Jack's bill was \$35 how many text messages did he send?

$$35 = .10x + 8$$

$$-8 \quad -8$$

$$27 = .10x$$

$$x = 270 \text{ TEXT MESSAGES}$$

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?

$LIN = r^2 = .824$
 $QUAD R^2 = .945$
 $EXP r = .998$

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

b) Write the formula of the regression model you used

$$y = .57(3.94)^x$$

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

$$y = .57(3.94)^8 \quad \text{33,101 people}$$

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

NO BECAUSE THERE ARE ONLY 30,000

e) What can you predict about the outbreak?

IT WILL HAVE TO LEVEL OUT

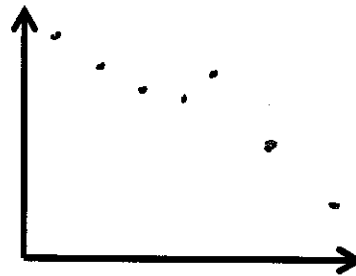
f) Sketch a graph of what the total spread of the outbreak will look like.



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.
- $X_{min} = 150$
 - $X_{max} = 290$
 - $X_{Scl} = 5$
 - $Y_{min} = 10$
 - $Y_{max} = 140$
 - $Y_{Scl} = 5$
 - $X_{res} = 1$



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

Linear $r = -.954$ Quadratic $r = .917$ Exponential $r = -.904$

c. Which model would be the best? Why?

LINEAR, STRONGEST CORRELATION COEFFICIENT

d. Write the model of the equation you picked.

$$y = -.79x + 249.86$$