GSE.	Algebra I
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Unit 6 – Describing Data

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## Regression

1. Students in Ms. Garth's Algebra II class wanted to see if there are correlations between test scores and time spent watching television. The students created a table in which they recorded 13 student's average number of hours per week spent watching television and scores on a test. Use the actual data collected by the students in Ms. Garth's class, as shown in the table below, to answer the following questions.

TV hrs/w (avera		30	12	30	20	10	20	15	12	15	11	16	20	19
Test Sco	ores	60	80	65	85	100	78	75	95	75	90	90	80	75

- a) Find the best fitting linear model that represents the data and the correlations coefficient.
- b) Identify the y-intercept. What does it represent in the context of the problem?
- c) Using this model, what is the estimated test score of a student who watches TV for 35 hours?
- d) Using this model, what is the highest number of hours a student can watch TV and still pass the test (make a 70)?
- 2. The town planners designed a town for an optimal growth of 8% per year. Below is a table representing the growth (in thousands) from 1997 to 2003.

Year	Population
1997	50
1998	54
1999	58
2000	63
2001	68
2002	73.5
2003	79.3

- a) Find the best fitting exponential model that represents the data and the correlation coefficient.
- b) Using this model, what is the predicted population in the year 2017?
- c) Using this model, what was the estimated population in 1977?
- d) In what year will the population have doubled?

## This table shows the population of a city every ten years since 1970.

- 3. Find the best-fitting quadratic model for the data. Round to 3 decimal places.
- 4. Using this model, what will be the estimated population in 2020?

Years Since 1970, x	Population (In thousands), y
0	489
10	801
20	1,202
30	1,998
40	2,959

- 5. Which of the following is best modeled by a quadratic function?
  - A. Relationship between circumference and diameter.
  - B. Relationship between area of a square and side length.
  - C. Relationship between diagonal of a square and side length.
  - D. Relationship between volume of a cube and side length.
- 6. If y is a quadratic function of x, which value completes the table?
  - A. 12
  - B. 20
  - C. 44
  - D. 48

х	-2	0	2	4	6
У	-8	0	12	28	

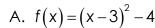
- 7. The graph of a quadratic function having the form  $f(x) = ax^2 + bx + c$  passes through the points (0, -8), (3, 10), and (6, 34). What is the value of the function when x = -3?
  - A. -32

B. -26

C. -20

D. 10

8. Which is the quadratic equation the best fits the scatterplot?



B. 
$$f(x) = (x+3)^2 + 4$$

C. 
$$f(x) = (x-4)^2 - 3$$

D. 
$$f(x) = (x+4)^2 + 3$$

