

Applied Math 40S

Modelling Data with a Curve of Best Fit 6.4

Quiz

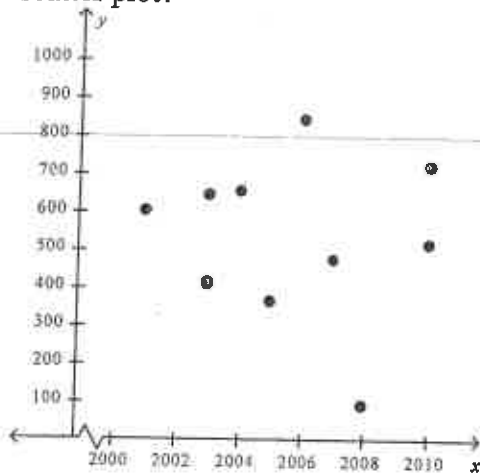
Name: _____

Date: _____

Multiple Choice

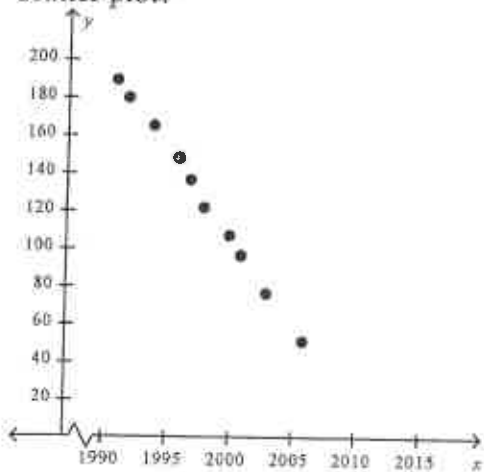
Identify the choice that best completes the statement or answers the question. (1 mark each)

- _____ 1. What kind of relationship might there be between the independent and dependent variables in this scatter plot?



- A. linear
- B. quadratic
- C. cubic
- D. none of the above

- _____ 2. What kind of relationship might there be between the independent and dependent variables in this scatter plot?



- A. linear
- B. quadratic
- C. cubic

D. none of the above

3. The path of a shot put thrown at a track and field meet is modelled by the quadratic function $h(d) = -0.048(d^2 - 20.7d - 26.28)$ where h is the height in metres and d is the horizontal distance in metres. How far has the shot put travelled when it finally hits the ground?

- A. 20.9 m
- B. 21.4 m
- C. 21.9 m
- D. 22.4 m

4. The average retail price of gas in Canada, from 1979 to 2008, can be modelled by the function $P(y) = 0.008y^3 - 0.307y^2 + 4.830y + 25.720$ where P is the price of gas in cents per litre and y is the number of years after 1979. During which year did the price of gas reach 50¢/L?

- A. 1985
- B. 1988
- C. 1991
- D. 1993

5. Determine the equation of the quadratic regression function for the data.

x	1	2	3	4	5
y	100.8	101.3	101.5	100.9	99.8

- A. $y = -0.3x^2 + 1.5x + 99.6$
- B. $y = -1.3x^2 + 0.5x + 99.6$
- C. $y = -0.5x^2 + 1.3x + 99.6$
- D. $y = -1.5x^2 + 0.3x + 99.6$

6. Determine the equation of the quadratic regression function for the data.

x	-6	-3	-1	1	1	3	5	8
y	35	46	50	53	51	47	36	11

- A. $y = -0.4x^2 - 0.6x + 48.8$
- B. $y = -0.4x^2 - 0.6x + 52.1$
- C. $y = -0.6x^2 - 0.4x + 48.8$
- D. $y = -0.6x^2 - 0.4x + 52.1$

4. Determine the equation of the quadratic regression function for the data. Round all values to the nearest hundredth.

x	1.5	2	2.5	3	3.5	4	4.5	5
y	-6.8	-6.4	-6.6	-7.3	-8.5	-10.2	-12.8	-16.0

5. Determine the equation of the cubic regression function for the data. Round all values to the nearest hundredth.

x	1	1.5	2	2.5	3	3.5
y	314	253	216	198	193	167

Problem

1. Ida hit a golf ball from the top of a hill. The height of the ball above the green can be modelled by the regression equation,

$$h(t) = -9.7t^2 + 48.4t + 11.5$$

where h represent the height in metres and y represents the time in seconds.

- Use your knowledge of polynomial functions to describe the curve of this function.
- Determine the y -intercept. What does it represent in this context? Show your work.
- The roots of this equation are near $t = -0.2$ and $t = 5.2$. What do these points represent, if anything?

2. A research company summarized the average time spent everyday by teenagers watching television.

Year	1999	2000	2001	2002	2003	2004	2005	2006
Time (min)	179	195	196	190	187	185	182	169

- Create a scatter plot, and draw a curve of best fit for the data using quadratic regression.
- Use your graph to estimate the average amount of time spent watching television in 2008.

