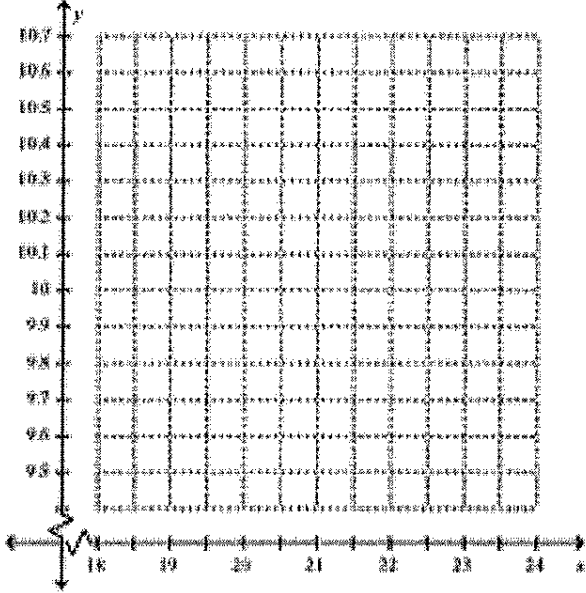


1 In BMX dirt-bike racing, jumping high or "getting air" depends on many factors: the rider's skill, the angle of the jump, and the weight of the bike. Here are data about the maximum height for various bike weights.

Weight (pounds)	19	19.5	20	20.5	21	22	22.5	23	23.5	24
Height (inches)	10.35	10.3	10.25	10.2	10.1	9.85	9.8	9.79	9.7	9.6

a. Plot the data on the graph below. Be sure to label the graph.



- b. Find the line of best fit.
- c. What do the rate of change and y-intercept tell you about this situation?
- d. Using your equation or your graph, predict the maximum height for a bike that weighs 18 lbs.
- e. Using your equation or your graph, predict the weight of a bike that jumped 10 inches.

ROUND ALL ANSWERS TO TWO DECIMAL PLACES

Find the **QUADRATIC** equation that best models the data.

2 The following data represents the average maximum and minimum temperatures recorded each month in Raleigh, NC, over a 6-month period. The temperatures recorded are in degrees Fahrenheit.

Max	72.3	79.0	85.2	88.2	87.1	81.6
Min	46.5	55.3	62.6	67.1	68.0	60.4

- (A) Find the **QUADRATIC** equation that best models the data.
- (B) Predict minimum temperature if the maximum temperature is 90.
- (C) Predict the maximum temperature if the minimum temperature is 40.

Linear Regression Models

3

The giant panda is an endangered animal that primarily lives in China. A grown male panda can weigh up to 350 pounds. The weight of a panda bear was recorded when it was born.

Age (months)	1	2	3	4	6	8	10	12
Weight (in pounds)	2.5	7.6	12.5	17.1	24.3	37.9	49.2	54.9

a. Find a linear model that best fits the data.

b. Predict the weight of the panda that is:

i. 15 months old:

ii. 20 months old:

iii. 24 months old:

c. Predict the age of the panda that weighs:

i. 100 lbs:

ii. 150 lbs:

iii. 200 lbs:

4

Determine if the data is linear or quadratic. Then find the equation that best models the data.

This data table shows the per capita consumption of broccoli, b (in pounds) for the years 1980 through 1989. Let t represent the year, with $t = 0$ corresponding to 1980.

Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Pounds	1.6	1.8	2.3	2.9	2.7	2.9	3.5	3.6	4.2	4.5

(C) Write the equation that best models the data.

(D) In which year was the per capita consumption of broccoli 5 pounds?

(E) What would the per capita consumption of broccoli be in 2005?

5

Sally and her friends left for a road trip during spring break. They recorded how many miles they drove after each hour.

Hours Driven	1	2	3	4	5	6	7	8	9	10
Distance Travelled (miles)	55	108	168	230	323	385	452	524	607	698

- a. Find the linear model that best describes the data.
- b. Predict the distance traveled if Sally has been driving:
i. 6 hours:
- c. Predict the number of hours driven if the distance traveled:
i. 1600 miles:

6

The table below shows the study time and test scores for a number of students.

Study Time (min)	7	14	17	23	27	33	38	43
Test Score	61	54	63	65	70	69	75	77

- (C) Write the equation that best models the data.
- (C) Predict the test score of a student who studies for 60 minutes.
- (E) How much time would a student who scored 72 have studied for the test?

