

1. The table gives the Olympic pole vault records in the twentieth century.

(a) Find the regression line for the data

Equation: \_\_\_\_\_

(b) Make a scatter plot of the data and graph the regression line. Does the regression line appear to be a suitable model for the data? Yes or No

(c) Use the model to predict the record pole vault height for the 2004 Olympics. Find the actual record height and by whom. Is this a good prediction?

(d) Use the model to predict the record pole vault height for the 2008 Olympics. What was the actual gold medal height and by whom? Is this a good prediction?

Year	Height (m)
1900	3.30
1904	3.50
1906	3.50
1908	3.71
1912	3.95
1920	4.09
1924	3.95
1928	4.20
1932	4.31
1936	4.35
1948	4.30
1952	4.55
1956	4.56
1960	4.70
1964	5.10
1968	5.40
1972	5.64
1976	5.64
1980	5.78
1984	5.75
1988	5.90
1992	5.87
1996	5.92
2000	5.90

(e) Use the model to predict the record pole vault height for the 2012 Olympics. Do you think the actual record in 2012 will be higher or lower than this prediction? Why?

2. Anthropologists use a linear model that relates femur length to height. The model allows an anthropologist to determine the height of an individual when only a partial skeleton (including the femur) is found. In this problem we find the model by analyzing the data on femur length and height for the ten males given in the table.

Femur Length (cm)	Height (cm)
50.1	178.5
48.3	173.6
45.2	164.8
44.7	163.7
44.5	168.3
42.7	165.0
39.5	155.4
38.0	155.

(a) Make a scatter plot of the data.

(b) Find and graph a linear regression equation that models the data.

Equation: \_\_\_\_\_

(c) An anthropologist finds a femur of length 58 cm. How tall was the person?

(d) If a person is 151cm tall, what does the model predict for their femur length?

3. A convenience store manager notices that sales of soft drinks are higher on hotter days, so he assembles the data in the table.

High Temperature (°F)	Number of cans sold
55	340
58	335
64	410
68	460
70	450
75	610
80	735
84	780

(a) Make a scatter plot of the data.

(b) Find and graph a linear regression equation that models the data.

Equation: \_\_\_\_\_

(c) Use the model to predict soft-drink sales if the temperature is 95°F.

(d) What does the model predict for the temperature if the number of cans sold was only 95?