Linear Regression Worksheet

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

(a) Make a scatter plot of the data.

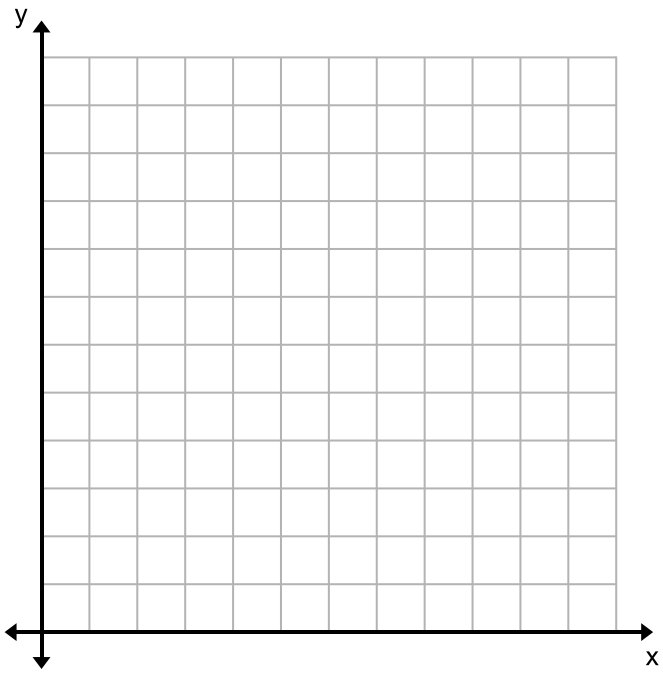
(b) Find and graph a linear regression equation that models the data.

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

Equation:_____

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

(d) Using the scatterplot, describe the association you see between the two variables. Make sure to mention form, direction and strength.



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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	155.0

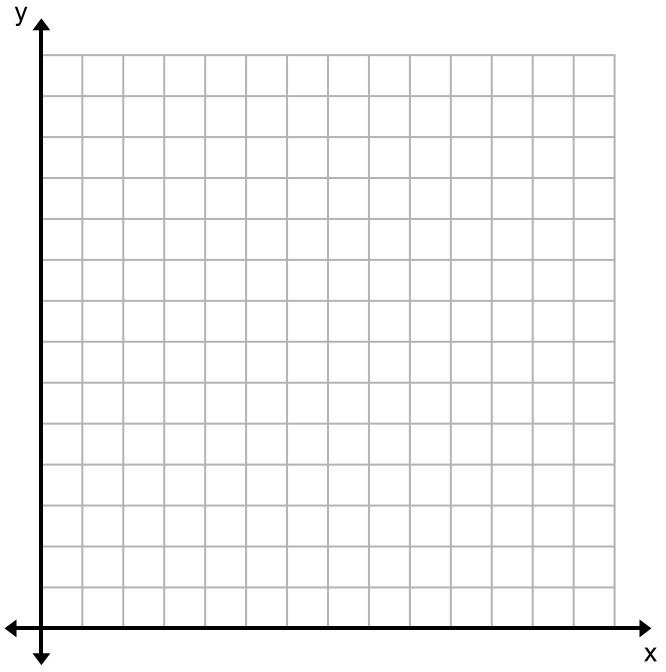
(a) Make a scatter plot of the data.

(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) Using the scatterplot, describe the association you see between the two variables. Make sure to mention form, direction and strength.



3. Flying Start Machine 200 m - Race World Record Times The following data chart shows the world record times for the 200 m race for flying start machines (a kind of bicycle)

Year	Record Time (sec)
2012	10.4
2013	10.0
2014	9.4
2015	8.8
2016	7.2
2017	6.8
2018	6.5

How would you describe the correlation between Year and World Record Times?

a) What is the equation of the line of best fit?

b) What is the slope of the line of best fit?

c) Why is the slope a negative slope?

d) Using the equation of the line, calculate the actual world record time set in 2020.

4. For each of the following, write the prediction equation and then solve the problem. A student who waits on tables at a restaurant recorded the cost of meals and the tip left by single diners.

Meal Cost (Baht)	475	684	1250	2042	899	950
Tips (Baht)	5	15	20	130	15	10

If the next diner orders a meal costing 1050, how much tip should the waiter expect to receive?

5. The table below gives the height and shoes of six randomly selected men.

Height (inch)	67	70	73.5	75	78	66
Shoe size	8.5	9.5	11	12	13	8

If a man has a shoe size of 10.5, what would be his predicted height?