

5.3 Correlation

NAME: _____

Corrective Assignment

DATE: _____

Use a sentence to explain the meaning of the slope and y-intercept of the best fit line for each situation.

1. Hewey, Dewey and Louie are keeping track of their weight over time where w stands for time in weeks and p stands for their weight in pounds.

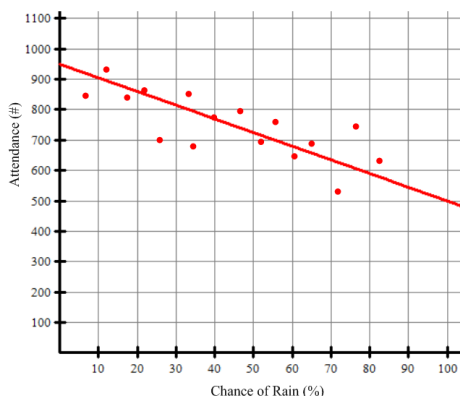
HEWEY $p = -\frac{7}{2}w + 180$ slope = _____
 y-intercept = _____

DEWEY $p = 2w + 140$ slope = _____
 y-intercept = _____

LOUIE $p = 1.75w + 150$ slope = _____
 y-intercept = _____

Use the scatterplot and equation for the best fit line/curve to answer the following.

2. The scatterplot shows the percent chance of rain and the attendance at a Six Flags amusement park. The equation of the best fit line is $y = -4.5x + 950$ and is shown graphed below.



- a. Use a sentence to explain the meaning of the slope in this context.
- b. The r -value for this best fit line model is -0.91 . Explain what this means.

Use the data to find the best fit linear regression and correlation coefficient. Round to nearest hundredth.

3.

x	y
20	140
18	121
15	107
22	158
25	172
28	194
13	92
31	201

EQUATION

Correlation Coefficient

Explain the meaning of the correlation coefficient.

4.

x	y
-12	480
-9	421
-7	304
-2	397
0	487
3	356
7	311
12	385

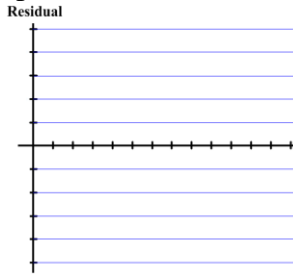
EQUATION

Correlation Coefficient

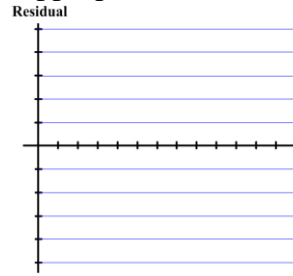
Explain the meaning of the correlation coefficient.

Sketch the following.

5. A residual plot that indicates the linear regression model is appropriate.



6. A residual plot that indicates the linear regression model is NOT appropriate.



Construct a scatterplot and answer the questions.

7. Length of a person's leg bone with their given height.

Femur length (cm)	50.1	48.3	45.2	44.7	44.5	42.7	39.5	38
Height (cm)	178.5	173.6	164.8	163.7	168.3	165	155.4	155

a. Find and graph a linear regression equation that models the data.
(Round to nearest hundredth)

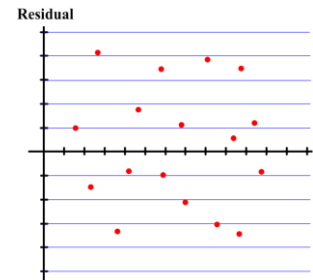
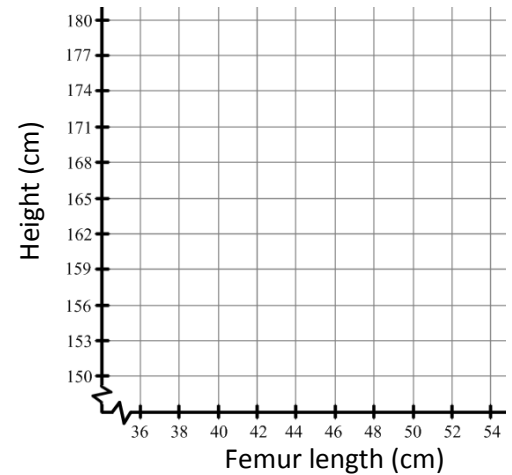
EQUATION: _____

CORRELATION COEFFICIENT: _____

b. Use a sentence to explain what the slope means.

c. Explain what the correlation coefficient means.

d. The graph shows the residual plot for the best fit line. Is this linear regression a good model? Explain why or why not.



Answers to Corrective Assignment 5.3

1. HEWEY Slope: loses 7 pounds every 2 weeks y-int: originally weighed 180 pounds	DEWEY Slope: gains 2 pounds per week y-int: originally weighed 140 pounds	LOUIE Slope: gains 1.75 pounds each week y-int: originally weighed 150 pounds
2. a. Attendance goes down 4.5 people every 1% increase in chance of rain. b. Strong negative correlation	3. $y = 6.35x + 11.55$ $r = 0.99$ Very strong positive correlation	4. $y = -3.1x + 389.52$ $r = -0.37$ Weak negative correlation
5. random points, no pattern	7. a. $y = 1.92x + 80.68$ $r = 0.97$ b. Femur length increases 1.92 cm for every 1 cm of height c. Very strong positive correlation d. Yes, indicates a good model. Points are random, no pattern.	
6. not random points, pattern		