

Pledge:

10/2/2007
Dr. Lunsford

MATH 171
Quiz 3

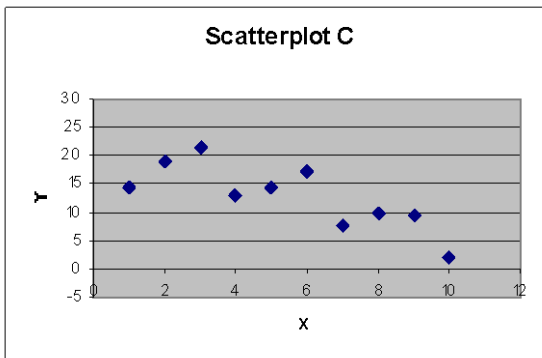
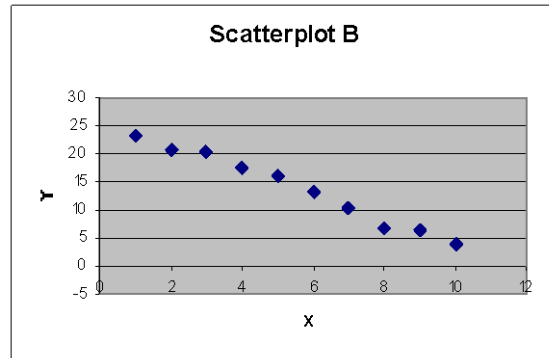
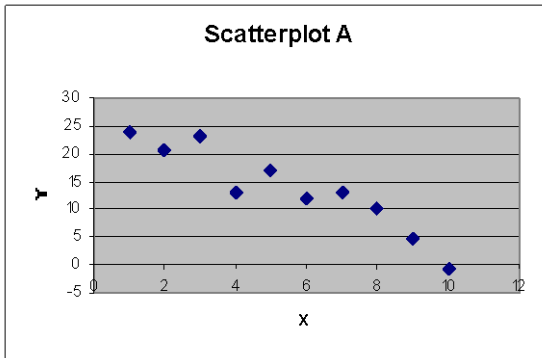
Name: _____
30 Points Possible

Problem I. The heights of women aged 20 to 29 follow approximately the normal distribution with mean 64 inches and standard deviation 2.7 inches. The heights of men the same age are also approximately normal with mean 69.3 inches and standard deviation 2.8 inches. Please answer the following being sure to show all calculator input. (4 points each – 8 points total)

(a) What percent of young women are taller than the mean height of young men?

(b) Find the first and third quartiles for the heights of the men (i.e. find the smallest and largest heights a man can have so that his height would place him among the middle 50% of men (in terms of height)). Clearly indicate your answers.

Problem II. Below you are given three scatterplots and three correlation coefficients. Please write the name of the scatterplot (i.e. either A, B, or C) in the blank next to the correlation coefficient for the scatterplot. (2 points each – 6 points total)



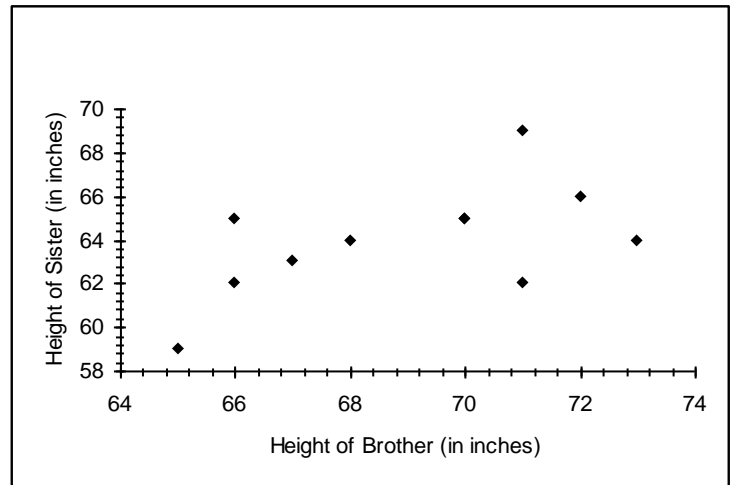
$r = -0.79407$ _____

$r = -0.94104$ _____

$r = -0.99315$ _____

Problem III. How strongly do physical characteristics of sisters and brothers correlate? Below is a scatterplot of the heights of 11 adult pairs of brothers and sisters. The mean height of the brothers is 69 inches and their standard deviation is 2.72 inches. The mean height of the sisters is 64 inches with a standard deviation of 2.57 inches. The correlation coefficient for these two variables is 0.5581. Please answer the following questions. (16 points total)

(a) Find the equation of the least squares regression line that will predict the height of a sister given the height of her brother. Please show all work. (4 points)



(b) What are the coordinates of the centroid of the data? Graph the centroid of the data on the scatterplot above. Clearly indicate the centroid on the scatterplot. (2 points)

(c) Accurately graph the line found in part (a) on the scatterplot. Note that the vertical axis on the scatter plot is at $x = 64$. (3 points)

(d) Damien is 70 inches tall. Predict the height of his sister Tonya using the line found in part (a). Show your work below and also show this prediction graphically using the “up and over” lines. (3 points)

(e) What percent of the variation in heights of the sisters is explained by the regression line found in part (a)? (2 points)

(f) Do you expect your prediction of Tonya’s height in part (d) to be very accurate? Why or why not. (2 points)