

STAT 516 - Spring 2004 - Homework 1

Due: Wednesday, January 28th

1) (3 points) Concept Questions: In each case remember to correct the statement if it is false.

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2) (5 points) One of the earliest places that regression was discussed was in a paper entitled "Typical Laws of Heredity" that was delivered by Sir Francis Galton in 1877. Galton categorized his sweet pea plants by the size of the seeds they produced (measuring the diameter in hundredths of an inch). Using parent pea plants of several different sizes, he arranged for 90 pea plants to be grown from each size (by forcing several friends to help). Although several of the offspring didn't make it, he measured the average diameter of the peas for the plants that did survive. A portion of this data was:

Diameter of Parent Peas	Mean Diameter of Offspring Peas
20	17.07
19	16.37
18	16.40
17	16.13
16	16.17

By hand (well, you can use a calculator) calculate the estimated regression line and \sqrt{MSE} for predicting the mean offspring diameter from that of the parent. Briefly interpret the estimated slope and the estimated \sqrt{MSE} . Also say whether or not you would expect the \sqrt{MSE} to be larger or smaller if you had all 450 individual measurements for the peas and briefly (in a sentence or two) say why.

3) (2 points) Complete the following ANOVA table for a simple linear regression for predicting the weights of five men from their heights.

Source	SS	df	MS	F
Regression	1222.38	_____	_____	_____
Error	527.62	_____	175.87	_____
Total	_____	=====		