Handout on Simple Linear Regression 2
Due Date: None

1. A sample of 10 billionaires is selected, and the person's age and net worth (in billions) are compared. The data are given here.

X (age)	56	39	42	60	84	37	68	66	73	55
Y (net worth)	18	14	12	14	11	10	10	7	7	5
$\hat{y}$ (estimated y)										
residuals										

Note: Use the equation $\hat{y} = 14.7 - 0.0673x$

a. Find $\hat{y}$ for each x.

b. Find a residual for each x.

c. Calculate the sum of squares total (SST).

d. Calculate the sum of squares regression (SSR).

e. Calculate the sum of squares due to error (SSE).

f. Calculate the coefficient of determination (R^2).

g. Calculate the mean square error (MSE).

h. Calculate the root mean square error (RMSE).

i. Calculate the standard error of the slope estimate (b_1).

j. Calculate the t-value for the slope estimate (b_1).

k. Calculate the standard error of the intercept estimate (b_0).

l. Calculate the t-value for the intercept estimate (b_0).

m. Calculate the F-value for the regression.

2. The data on price ($) and the overall score for six stereo headphones tested by *Consumer Reports* were as follows (*Consumer Reports* website, March 5, 2012).

Brand	Price ($)	Score
Bose	180	76
Skullcandy	150	71
Koss	95	61
Phillips/O'Neill	70	56
Denon	70	40
JVC	35	26

a. Find the linear regression equation that predicts the Score based on Price. State the parameter estimates to 2 places past the decimal.

b. Calculate the SST, SSR, and SSE.

c. Compute the coefficient of determination (R^2).

d. Computer the root mean square error (RMSE).

e. Calculate the standard error of the slope estimate (b_1).

f. Perform a t-test.

g. Does the t test indicate a significant relationship between price and the overall score? What is your conclusion?

h. Test for a significant relationship using the F-test. What is your conclusion?