Assignment #1

- 1. A regression analysis relating test scores (Y) to training hours (X) produced the following fitted equation: y = 15.0 + 0.9x
- (a) What is the fitted value of the response variable corresponding to x = 6?
- (b) What is the residual corresponding to the data point with x = 5 and y = 17?
- (c) If x increases 3 units, how does y change?
- (d) Consider the data point in part (b). An additional test score is to be obtained for a new observation at x = 3. Would the test score for the new observation necessarily be 17.7? Explain.
- (e) The error SSE for this model was found to be 7. If there were n = 18 observations, provide the maximum likelihood and least squares estimate for σ^2
- (f) Rewrite the regression equation in terms of x* where x* is training time measured in minutes. Show that your answer makes sense, i.e. gives the same predictions as the original equation (an example is sufficient).
- 2. Explain the difference between the following two equations:

$$y = \beta_0 + \beta_1 x$$
$$y = \beta_0 + \beta_1 x + \varepsilon$$