**OpenIntro Questions 7.1 to 7.117**

7.1 a. The residual plot will not show much variability around x as all points are close to horizontal regression line.

b. The residual plot will show high variability on left for small values of x.

7.2 a. For high values of x there is high variability in residual plots and linear regression model might not fit well.

b. Except for few outliers on the left for small values of x the data is consistent around the regression line with small residual values for all values of x. Linear regression model will fit well.

7.3 a. strong positive – linear model won’t fit

b. strong positive- linear model will fit

c. Weak– fitting linear model will be reasonable

d. moderate negative – linear model will not fit

e. Strong linear negative – linear model will fit

f. Weak – Fitting linear model will be reasonable.

7.4 a. strong negative relationship but linear model won’t fit

b. strong positive relationship but linear model won’t fit.

c. strong positive relationship linear model will fit well

d. Weak relationship and fitting linear model will be reasonable

e. Weak negative relationship and fitting linear model will be reasonable

f. moderate negative relationship and fitting linear model will be reasonable

7.5 a. Exam2 and final exam grade have high correlation because the data points are located more close to the best fit line.

b. The correlation is higher because the residual error is lower in Exam2 graph than Exam1 graph.

7.6 a. husband’s and wife’s ages have a strong linear positive relationship.

b. Husband’s and wife’s height have a moderate positive relationship.

c. Age plot shows stronger correlation as data points are more close to a regression line.

d. No as far as both husband’s and wife’s height are compared on same scale.

7.7 a. 4

b. 3

c. 1

d. 2

7.8 a. 2

b. 4

c. 3

d. 1

7.9

a. True,

b. False – linear association.

7.10 The correlation coefficients should not be affected because the value of data points are same.

7.11 a. The relationship is moderately positive and linear.

b. No explicit explanation why the speed is higher for taller people but gender plays an important role.

c. For male the value of height and fastest speed are high in comparison to females.

7.12

a. The volume and height have a weak, linear, positive association as there are data points with high value if heights and low value of volume of timber.

b. The volume and diameter of the tree have a strong, positive, linear relationship.

c. Just from the positive association we cannot decide which variable is best suitable to predict the volume of timber in trees but yes since diameter has a more strong association it can be used as one of the explanatory variables.

7.13

a. Weal linear positive

b. It won’t change as units of measurement doesn’t affect the relationship.

c. r = 0.636

7.14

a. weak negative linear

b. it will not change

c. -0.70

7.15

a. moderate positive linear.

b. The relationship will not be represented correctly as the both units are not measured on same scale but the trend will remain similar.

7.16

a. Strong positive linear

b. No change

7.17

a. wife = husband – 3

b. = wife = husband\*2

c. wife = husband/2

A perfect correlation of 1 since the relation is strong linear and positive.