

15) \rightarrow a) \rightarrow simple regression equation $y = \text{murder/mi}$
 $x = \% \text{ unemployed}$
 c) $\rightarrow R^2$ value

16) Can't d?

d \rightarrow total variation left unexplained by the model
 c $\rightarrow R^2 = SS_R / SS_T$

17)

1. Homoscedasticity
2. SSE is the total variation left unexplained. It's the difference between the data points and the line of best fit.
3. $[0, 1]$
4. R^2
5. $[-1, 1]$
6. The assumptions are that the data is normal, the extraneous values have a mean value of zero, and that there is no correlation between x and the extraneous values

15) a) $y = -28.52671 + 7.079554x \rightarrow x = \% \text{ unemployed}$

b) As unemployed goes up 1, murders go up by 7.079

At 0 unemployment, there are -28.53 murders

c) $R^2 = .7480$

16) a) $y/x \rightarrow (y_i - \bar{y})(x_i - \bar{x}) / (x_i - \bar{x})^2 \rightarrow \Delta x / x^2 = y/x$

$$\text{slope} = 296446.059 / 147911.938 = 2.004 = \text{slope}$$

$$107.43 = (128.88)(2.004) + y$$

$$107.43 = 258.30 + y$$

$y \text{ intercept} = -150.87$ This doesn't make sense because time has to be positive but I don't have enough time to fix it

b) For every unit increase in distance, time increases by 2.004

When distance = 0, time = -150.87

$$c) R^2 = SS_R / SS_T = 1 - SSE / SS_T$$

$$SSE = 592892.117$$

$$SS_T = 1185784.73$$

$$R^2 = 1 - .500... \rightarrow R^2 = .4999$$

$$e) y = (103)(2.004) - 150.87$$

$$y = 55.542$$

$$d) SSE = 592892.117$$

SSE is the total variation left unexplained by the model