Chapter 11 Theory

- The independent variable is represented by _____, and the dependent variable is represented by _____.
- There are 3 possible relationships between the 2 variables:
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    -
    -
- There are 2 models to know:
    - Population Linear Model (_____)
    - Linear Regression Model (_____)
    - For these models:
        - Slope is notated as _____ and _____ depending on the model
        - Vertical intercept is notated as _____ and _____ depending on the model
        - _____ is the true value
        - _____ is the estimate of the true value
        - _____ is the noise (and is only used in the Population Linear Model)

- The smaller the _____ is, the better the linear regression line fit.
- The Coefficient of Correlation is notated by _____
    - The strength of R is determined by how close R is to the extremes _____ and _____, as the values are _____
    - Rough Guide:
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        -
    - The _____ shares the same sign (___/___) with _____
- If 1 of the 2 variables has a direct influence on the other, that is known as a _____
- The Coefficient of Determination is notated by _____
    - This value is always between _____
- A _____ is a graph that pairs the variable ___ with the _____ for each value
    - If the linear regression is successful, these residuals should be _____ and _____
    - These plots expose _____ (values more than _____ standard deviations from the mean)

- The _____ appears when the relationship in not linear

- A _____ is a residual plot where all the residuals are divided by the residual standard error.
  - The residual standard error is notated as _____
- An _____ is an observation that affects the regression equation
  - These points, when removed, change the position of the regression line quite a bit.
- Relevant Calculator Methods:
  - Scatter Plots
    - Insert data into lists
    - Make your scatter plot
    - Zoom in to your plot
  - LinRegTTest
    - Insert data into lists
    - Use the function

- LinReg(a+bx)
  - Insert data into lists
  - Use the function

- Formulas:
  - Error
  - Sum of Squares Error
  - Estimated Slope
  - Estimated Vertical Intercept
  - Coefficient of Correlation
  - Coefficient of Determination

- Standardized Residual Plot Point

- Hypotheses and Interpretations
  - Both have the hypotheses where null states that _____ while the alternative states _____
  - For Correlation, the interpretation is a _____
    - Example: Strong positive linear association
  - For Determination, the interpretation is a _____ in relation to the hypotheses
    - _____ of the variation in y can be explained by x.
    - We have _____ evidence to say that the true population slope is not 0.