**Chapter 3: Describing Relationships Outline AP Statistics**

*Essential Questions:*

1. In what ways can you describe the relationship between two variables?
2. How do statisticians make predictions based on data?
3. How do you determine if a linear model is appropriate to represent the data?

*Knowledge: You should be able to define, illustrate, or calculate the following:*

* + Response Variable
  + Explanatory Variable
  + Scatterplot
  + Form, Outliers, Directions, Strength (FODS)
  + Positive/Negative Association
  + Correlation *r*
  + Regression line
  + Predicted value, *y*ˆ
  + Slope
  + *y* intercept
  + Extrapolation
  + Residual
  + Least-squares regression line
  + Residual Plot
  + Standard deviation of the residuals
  + Coefficient of Determination, *r*2
  + Influential observation

*Skills: You should be able to…*

* + Identify explanatory and response variables.
  + Make a scatterplot to display the relationship between two quantitative variables.

o Add categorical data

* + Describe scatterplots by form, outliers, direction, and strength.
  + Find *r* and *r*2 using your calculator and interpret.
  + Explain why association does not imply causation.
  + Interpret the slope and *y* intercept of a least-squares regression line.
  + Use the least-squares regression line to predict *y* for a given *x*.
  + Recognize problems with extrapolation.
  + Calculate and interpret residuals.
  + Determine the equation of a least-squares regression line using technology or computer output.
  + Construct and interpret residual plots.
  + Interpret the standard deviation of residuals and *r*2.
  + Recognize influential observations and describe how they affect an LSRL.
  + Find the slope and *y*-intercept of the least-squares regression line from the means, standard deviations of *x*

and *y*, and correlation.

Monday Tuesday Wednesday Thursday Friday

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| 7 | 8 | 9  REACH Assessment | 10  Scatterplots (3.1)  Homework #1  **\*Stamp will be issued upon return** | 11  Correlation (3.1)  LSRL, Prediction (3.2)  Homework #2  **\*Stamp will be issued upon return** |
| 14  Columbus Day  No Classes | 15  LSRL, Prediction (3.2)  Homework # 3  **\*Stamp will be issued upon return** | 16  Calculating Equation of LSRL (3.2) | 17  Residual & Residual Plots (3.2)  Homework # 4  **\*DUE DAY OF RETURN** | 18  Coefficient of determination, Role of standard deviation of residuals, Interpreting Computer Regression Output (3.2)  Homework #5  **\*DUE DAY OF RETURN** |
| 21  Ch. 3 Review  Homework #6  **\*DUE DAY OF RETURN- Solutions posted** | 22  **Ch. 3 Quiz**  **CONCEPT CHECK**  **\*DUE DAY OF RETURN – Will be graded for accuracy** | 23  Ch. 3 Review  Homework #7  **\*DUE DAY OF RETURN- Solutions posted** | 24  Ch. 3 Review  Homework #8  **\*DUE DAY OF RETURN** | 25  Ch. 3 Review  \*\*\*College Board Assignments:  Unit 2 Progress Check: FRQ  **\*DUE ASAP** |
| 28  Ch. 3 Review  \*\*\*College Board Assignments:  Unit 2 Progress Check: MCQ Part A  **\*DUE ASAP** | 29  Ch. 3 Review  \*\*\*College Board Assignments:  Unit 2 Progress Check: MCQ Part B  **\*DUE ASAP** | 30  **Test 3: Chapter 3 - Linear Regression** |  |  |