Corrections

1. A, C

2. B, D

5. C, D

6.

1. I would choose payments made on my credit card as the predictor variable and the APR as the response variable.
2. I would try to fit this with an SLR. I would run a regression model in R to find the values of the parameters of beta_0 and beta_1. From here, I would have the equation of the general relationship APR_hat = beta_0 + beta_1*payments.
3. There are many things I could do here. I could look at the residual plot to see if there are any issues with linearity or constant variance. I could also run a t-test on the slope/beta_1 value to see if the relationship is meaningful. Finally, I can also look at the normal quantile plot to check the normality condition.
4. Then, I could use this model to find information such as a confidence interval for the mean or the prediction interval for a specific payment amount.

8. a) Based on the normal quantile plot, we can say that the normality condition has been met. This is because the points on the normal quantile plot generally follow the behavior of the fitted line. Further, from the residuals plot, we can tell that the linearity and constant variance conditions have been met, Linearity is met because there are essentially the same number of points above and below the x-axis. The constant variance condition has been met because the residual values stay pretty much the same across the plot. Further, there is no pattern seen such as funneling. Using the studentized results, caan check that the residuals are centered at zero, which they are. Finally, we can't make conclusions about the randomness and independence conditions until we look at the data itself.

9. c) To determine if our runner's rate of burning calories is different from this average for all people in the age group, I would run a one-sample t-test in hopes of finding a p-value. In this case, Ho = our runner's rate is not different from average for all people in age group, Ha = our runner's rate is different. The p-value over 0.05 would confirm the null, and a p-value under 0.05 would reject null in favor of Ho. We could also run a confidence interval to see if the runner's rate of burning calories is within the upper and lower bounds. If it is not contained within the calculated confidence interval, then we can say that we are (1-alpha)% sure that the runner has a statistically different rate of burning calories.