EP 7
16 Points

Exam Practice 7

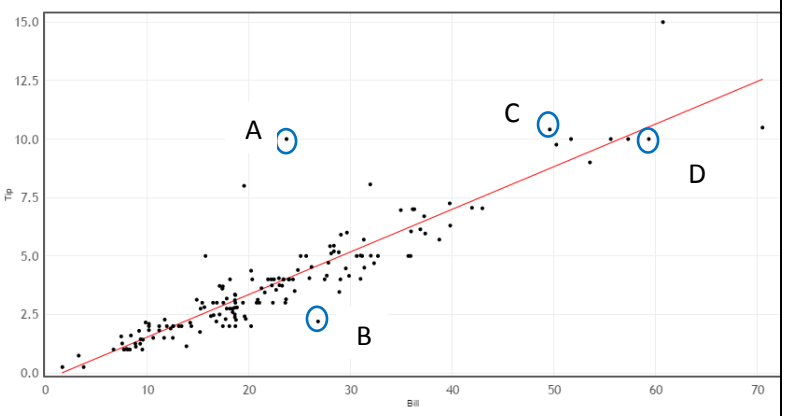
Section: 014 Name: _____

Print off this assignment and write in your answers. Turn this in Friday, April 17th in class (1:10pm)! Each answer is one point unless noted differently.

1) A random sample of 157 bills from a local Bozeman restaurant were collected and researchers recorded the bill amount and the tip amount for each to create the given scatterplot. The regression line was calculated to be

$$\widehat{Tip} = -0.292 + 0.182(Bill)$$

a) What is the correlation of the plot?
   A. -0.89
   B. 0.92
   C. -0.03
   D. 0.36



b) Predict the tip amount on a bill costing $23.70.

c) One of the 157 bills was for $23.70. The tip left was $10. Calculate the residual.

d) Which of the circled points would have the largest negative residual?

   A. B. C. D.

e) Interpret the slope of the line in the context of the problem.

f) The y-intercept in this regression is not useful. What term best describes this problem?
   A. Extrapolation
   B. Regression
   C. P-value
   D. Residual

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2) In June 2013, the mayor of New York City proposed a limit of at most 16 ounces on sugary beverages sold in restaurants. He argued that limiting sugar intake would lower rates of obesity and diabetes. A Gallup poll used a random sample of 1015 US adults on June 15-16. They asked if people support a ban on sugary beverages with over 16 ounces in restaurants. Only 485 respondents said they favored the ban.
   a) We want to know if less than half of NYC residents favor the ban. What are our null and alternative hypotheses in proper notation? (2 pts)
   H_0:

   H_a:

   b) Is the sample size sufficiently large to use the Normal distribution? Show your work to check this assumption.

   c) Compute the standard error of $\hat{p}$ under the null hypothesis. You must show your work to receive credit.

   d) Compute the test statistic. Again, show your work.

   e) The p-value was found to be 0.080. Give your conclusion in the context of the problem.

3) An article in *Journal of Periodontics* studied 52 young people with tongue piercings and found that 18 of them had receding gums, which could result in later tooth loss. The participants were basically a convenience sample, but the intended population is all "young people" with tongue piercings.
   a) Is this a sufficient large sample to use the normal distribution? Explain your reasoning.

   b) Compute the point estimate ($\hat{p}$).

   c) We want to build a 99% confidence interval. What multiplier from your table will you use?

   d) Build a 99% CI for the true proportion of "young people" with tongue piercings who have receding gums. Show all work!

   e) To what group of people does this interval apply?