Stat 204
Quiz 3 3/13/18 **Name:** _____

1. Here are some definitions from Chapters 3 and 4. For each definition, fill in the blank(s) with the word(s) being defined.

   (a) Half the width of a confidence interval is its _____ .

   (b) A _____ is an estimate of the standard deviation of a statistic that is based on the data.

   (c) A parameter value is _____ if the two–sided p-value for testing that parameter value is larger than the significance level.

   (d) An _____ is a study in which researchers actively assign subjects to treatment groups.

   (e) Two variables are _____ if the distribution of one variable differs across the values of the other variable.

   (f) An _____ is a study in which researchers do not intervene in order to attempt to influence responses.

   (g) In a _____ study, neither the subjects nor the evaluators know to which treatment group each subject belongs.

   (h) Well-designed studies are designed to determine how the _____ variable depends on the _____ variable.

   (i) The goal of _____ is to produce groups that are as similar as possible in all respects except for the treatment being studied.

2. Many studies have shown that babies born to women who smoked while pregnant tended to weigh less at birth than babies born to mothers who did not smoke while pregnant.

   (a) What kinds of studies are these?

   (b) What are the variables and the observational units in these studies?

   (c) Can a cause–and-effect conclusion be drawn from these studies? Explain your answer.

3. A recent study found that, in a sample of 1,771 teenagers, 333 had some level of hearing loss. One reporter summarized the study by asserting that "1 in 5 teens has hearing loss, study says."

   (a) Rephrase the reporter's claim as a null hypothesis, and provide the corresponding alternative hypothesis.

   (b) What is the observed statistic? Provide both its value and its correct notation.

   (c) Use an appropriate applet to determine a p-value.

   (d) Use an appropriate applet to compute a 95% confidence interval for the parameter of interest, and explain the interval in plain language.

   (e) Your p-value and confidence interval should be consistent. Based on them, what do you conclude?

4. For a sample of 43 speciments of Yellowfin tuna, the average mercury level was 0.358 parts per million (ppm) and the standard deviation of mercury level was 0.138 ppm.

   (a) What are the variable of interest and the observational units in this study?

   (b) Use the appropriate applet to compute a 95% confidence interval for the parameter of interest, and explain the interval in plain language.