CEE 110
Discussion Week 10

13. For a sample of 50 kitchens with gas cooking appliances monitored during a one-week period, the sample mean CO_2 level (ppm) was 654.16, and the sample standard deviation was 164.43.
    - **a.** Calculate and interpret a 95% (two-sided) confidence interval for true average CO_2 level in the population of all homes from which the sample was selected.
    - **b.** Suppose the investigators had made a rough guess of 175 for the value of *s* before collecting data. What sample size would be necessary to obtain an interval width of 50 ppm for a confidence level of 95%?

33. The following shows observations on degree of polymerization for paper specimens for which viscosity times concentration fell in a certain middle range:
    418 421 421 422 425 427 431 434 437 439 446 447 448 453 454 463 465
    - **a.** Construct a boxplot of the data and comment on any interesting features.
    - **b.** Calculate a two-sided 95% confidence interval for one average degree of polymerization (as did the authors of the article). Does the interval suggest that 440 is a plausible value for true average degree of polymerization? What about 450?

Example 8.6 A manufacturer of sprinkler systems used for fire protection in office buildings claims that the true average system-activation temperature is 130°. A sample of n = 9 systems, when tested, yields a sample average activation temperature of 131.08°F. If the distribution of activation times is normal with standard deviation 1.5°F, does the data contradict the manufacturer's claim at significance level a = .01?