

### Worksheet 9: Statistics III

1. You measured the caffeine content of five cups of coffee and obtained measurements of 116.0, 97.9, 114.2, 106.8, and 108.3 mg. Find
  - (a) The mean
  - (b) The standard deviation
  - (c) The standard deviation of the mean
  - (d) The range
  - (e) The 90% confidence interval for the mean
  - (f) Do you think any of the data points is an outlier? If so, use the proper test to determine if it should be discarded.
  
2. The absorbance of copper nitrate at 735 nm was measured for several concentrations in order to create a calibration curve. The absorbance at each concentration was measured 5 times, and the corrected values can be found in the supplement.
  - (a) Use the averages of the replicate absorbance measurements to determine the slope and intercept of the best fit line.
  - (b) Generate a graph of the data, including error bars corresponding to the 95% confidence interval.
  - (c) Predict the concentration of an unknown sample with an absorbance of 0.225.
  - (d) Estimate the uncertainty associated with the predicted concentration.
  - (e) What is the linear dynamic range for this procedure?