

A.P. Statistics
Assignment 1.7

Remember to show your thinking through your work.

1. Find the range, variance, and standard deviation (show the calculations) of the following set of numbers:

5, 8, 9, 12, 16

2. Consider the following data set:

3, 4, 6, 7, 9, 9, 11

If 5 were added to each of the values, how would that affect each of the following (no need to do any calculating, but be sure to explain why):

- a. mean.

- b. median.

- c. range.

- d. standard deviation.

3. Mary measures the weights of five newly hatched pythons in ounces. John converts Mary's measurements to grams. There are 28.35 grams in an ounce. Here are Mary's results:

| Python | 1 | 2 | 3 | 4 | 5 |
|--------|---------|---------|---------|---------|---------|
| Mary | 1.13 oz | 1.02 oz | 1.23 oz | 1.06 oz | 1.16 oz |

- (a) Calculate the mean and standard deviation of Mary's measurements *using the formula* for each.

- (b) Show how to calculate the mean and standard deviation of John's weights.

4. Use graphs and numerical summaries to describe how the following three datasets are similar and how they are different (think mean, median, range, and standard deviation).

A: 5, 7, 9, 11, 13, 15, 17 B: 5, 6, 7, 11, 15, 16, 17 C: 5, 5, 5, 11, 17, 17, 17

5. The questions below refer to decisions made by statisticians. Answer each of the following questions in a few sentences:

(a) Why might $\sum (x - \bar{x})^2$ rather than $\sum (x - \bar{x})$ be chosen to be used in building the formula for the variance (as a measure of spread)? Hint: consider what would happen if you used the non-squared version.

(b) Why might s be more commonly used than s^2 as a measure of variability?

(c) What factor should be considered when choosing between the median or mean as a description of the "center" of a data set?