

Workshop 3

Variability

Name: _____

Date Completed: _____

Provide all solutions, answers and requested outputs after each question.

- Question 1.** (a) Can SS ever have a value less than zero? Explain your answer.
(b) What does it mean for a sample to have a standard deviation of zero? Describe the scores in such a sample.

Question 2. For the sample $X = \{2, 4, 1, 3, 2, 1, 2\}$, compute the range and semi-interquartile range (use the concepts of median and quartile to compute).

Question 3. Compute the SS , variance, and standard deviation, for the following data values using the computational formula.

$$X = \{12, 14, 23, 13, 15, 20, 14, 18, 17, 15\}$$

Question 4 to 7 is based on the following data:

54 52 51 50 36 55 44 46 57 44 43 52 38 46
55 34 44 39 43 36 55 57 36 46 49 46 49 47

Question 4. Construct a stem and leaf display for the data and describe the distribution.

Question 5. Using any statistical package calculate the following (show all your outputs) mean, mode, median, variance, standard deviation

Question 6. Construct a boxplot and determine if a value of 63 would be an outlier.

- Question 7.** (a) Find the 65 percentile the data and
(b) What percent of the scores are below 47?

Question 8.

- (a) If all the scores were increased by a value of 5, how would that affect the mean and variance and
(b) if all the scores were divided by 2, how would that affect the mean and variance?

For the ODS.csv dataset,

Question 9. Compute the mean, mode, median, range, variance, and standard deviation for the pass4th variable.

Question 10. Construct a stem and leaf display and a boxplot of the data.