Stat 50 – Worksheet #16: Descriptive Statistics: Measures of Center, Spread, and Position

1. Data from a sample of 12 quiz scores are shown below.

8	10	10	11	13	14
16	16	18	19	20	20

  (a) Find the sample mean quiz score.

  (b) Find the sample standard deviation of the quiz scores.

  (c) Find the first quartile, median and third quartile of the quiz scores.

  (d) Suppose the instructor decides to add 2 points to each person's quiz score.

     i. Will the mean quiz score change? If so, what will it change to? Justify your answer.

     ii. Will the standard deviation of the quiz scores change? If so, what will it change to? Justify your answer.

2. Ceramic vases manufactured by XYZ Company are shipped out to be sold if they have four or fewer defects (pits or lumps in the finished surface). Vases with four or more defects are discarded. A sample of 100 vases from a lot that is ready for shipment is inspected. The number of flaws in each vase is recorded, and the results are summarized in the table below:

Number of Flaws	0	1	2	3	4
Number of Vases	50	20	10	15	5

  (a) Find the sample mean number of flaws in a vase.

  (b) Find the sample standard deviation of the number of flaws in a vase.

  (c) Find the sample median number of flaws.

  (d) Find the first and third quartiles of the number of flaws in a vase.

  (e) What proportion of vases had less than the mean number of flaws?

  (f) What proportion of vases had flaws within one standard deviation of the mean?

3. A company has two offices. The mean salary of 30 employees in their Los Angeles office is \$56,000 while the mean salary of 50 employees in their San Francisco office is \$74,000. What is the mean salary of all 80 employees in both offices?

4. Partial ordered data for a sample of 10 items is shown below.

200	254	300	305	$\cdots$	447	599

The mean of all 10 values in the dataset is 400 and the median is 350. Suppose the smallest value, 200, is accidentally changed to a 2.

  (a) Will the mean change? If so, what will its new value be?

  (b) Will the median change? If so, what will its new value be?