SOLUTIONS

King Fahd University of Petroleum & Minerals
Department of Mathematics & Statistics
STAT-319-Term063-Quiz1

Name: ID: Serial:

The following observations represent the diameter (in centimeters) of circular pipes.

4.6	4.7	4.8	4.9	5	5.3	5.5	5.7	5.9	6
6.1	6.1	6.3	6.4	6.5	6.9	7	7.3	7.4	7.8

Given that $\sum x_i = 120.2$, $\sum x_i^2 = 739.76$ answer the following:

a. Find the sample **mean** and **standard deviation**

i. $\bar{x} = \frac{\sum x_i}{n} = \frac{120.2}{20} = 6.01$ } 1 pt

ii. $S = \sqrt{\frac{\sum x_i^2 - n\bar{x}^2}{n-1}} = \sqrt{\frac{739.76 - (20)(6.01)^2}{20-1}}$ } 2 pts

$= 0.9558$

b. Find the inter quartile range(IQR)

$IQR = Q_3 - Q_1$

$Q_3 = P_{75}$. $R_{75} = \frac{75}{100}(20+1) = 15.75$

$P_{75} = X_{(15)} + (.75)(X_{(16)} - X_{(15)})$ } 2 pts

$= 6.5 + (.75)(6.9 - 6.5) = 6.8$

$Q_1 = P_{25} = ?$ $R_{25} = \frac{25}{100}(20+1) = 5.25$ } 2 pts

$P_{25} = X_{(5)} + (.25)(X_{(6)} - X_{(5)}) = 5 + (.25)(5.3 - 5) = 5.075$

$IQR = 6.8 - 5.075 = 1.725$ } 1 pt

c. Construct a stem-and-leaf plot.

4	6 7 8 9
5	0 3 5 7 9
6	0 1 1 3 4 5 9
7	0 3 4 8

} 3 pts

d. Construct a box-plot.

Median $= \frac{6+6.1}{2} = 6.05$, Min. $= 4.6$, Max. $= 7.8$ } 1 pts

3 pts