

SOLUTIONS

King Fahd University of Petroleum & Minerals

Department of Mathematical Science

STAT-211-Term052 -Quiz #3

Name: _____

ID: _____

Serial: _____

The students of a big school made their IQ's test. A sample of 22 students is selected at random. Their scores are as the following:

19 20 19 17 15 16 18 14 12 15 18 15 17 19 11 20 14 15 13 20 15 18

a. Find the following measurements for the data in this sample (Note:

$\sum x_i = 360, \sum x_i^2 = 6040$) ordered data: 11, 12, 13, 14, 14, 15, 15, 15, 15, 15, 16, 17, 17, 18, 18, 18, 19, 19, 19, 20, 20, 20

1. The mode (2-Points)

$$\text{The mode} = 15 \quad (2)$$

2. The median (2-Points)

$$\text{Median} = \frac{16 + 17}{2} = \frac{33}{2} = 16.5 \quad (2)$$

3. The mean (2-Points)

$$\bar{x} = \frac{\sum x_i}{n} = \frac{11 + 12 + \dots + 20}{22} = \frac{360}{22} = 16.3636 \quad (2)$$

4. The variance (4-Points)

$$\begin{aligned} s^2 &= \frac{\sum x_i^2 - \frac{(\sum x_i)^2}{n}}{n-1} \\ &= \frac{6040 - \frac{(360)^2}{22}}{22-1} \\ &= 7.0995671 \quad (4) \end{aligned}$$

5. coefficient of variation (2-Points)

$$s = \sqrt{s^2} = \sqrt{7.0995671} = 2.6645 \quad (2)$$

$$\begin{aligned} \text{C.V.} &= \left(\frac{s}{\bar{x}} \right) * 100\% = \frac{2.6645}{16.3636} * 100\% \\ &= 16.28\% \end{aligned}$$