

(6 minutes; 12 points)

1. Connect the definitions and formulas (expressions) with the appropriate statistics.
There can be more than one definition and/or expression for each statistic.
Put the letter for each definition or expression next to one of the given statistics.

Mean g, i, l

~~a.~~
$$\sqrt{\frac{\sum (x - \bar{x})^2}{n-1}}$$

Mode b

~~b.~~ The most frequent value in a sample or population

Midrange d

~~c.~~ The most commonly used measure of variation

Median f, k

~~d.~~
$$\frac{\text{max} - \text{min}}{2} \quad \left(\frac{\text{max} + \text{min}}{2} \right)$$

Range e

~~e.~~ The largest value minus the smallest value in a sample or a population

Standard Deviation a, c, j

~~f.~~ The value that separates the lower 50% of the data from the higher 50% of the data

Variance h

~~g.~~
$$\frac{\sum_{i=1}^n x_i}{n}$$

~~h.~~ The square of the standard deviation

~~i.~~ The most commonly used measure of the center

~~j.~~ The square root of the variance

~~k.~~ The value in the middle after the data have been arranged in sorted order

~~l.~~ The sum of the all data divided by the number of values used to make the sum

(6 minutes; 7 points)

2. For the sample of data in the box, determine the values of the seven sample statistics. Remember, you must use your calculator's special statistical functions to calculate the mean, standard deviation, and variance.

\bar{x} = Mean 11.58 or 11.6 using calculator

Mode 12 most common

Midrange 12 = $\frac{\text{max} + \text{min}}{2} = \frac{(15 + 9)}{2} = \frac{24}{2}$

Median 11.5

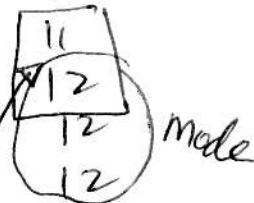
Range 6 = $\text{max} - \text{min} = 15 - 9$

Standard Deviation 1.98 = s

Variance 3.90 = s^2

8
14
9
14
12
10
10
11
11
12
12
15

- 9
- 9
- 10
- 10
- 11
- 11
- 12
- 12
- 14
- 14
- 15

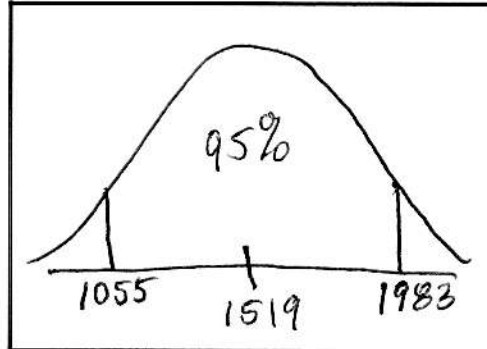


median = 11.5

(6 minutes; 5 points)

3. If a sample has a bell-shaped distribution for which 95% of the sample values are between 1055 and 1983, what is the approximate value of the standard deviation of the data?

(a) Draw a picture of the distribution in the box, and include any helpful information as part of the picture.



(b) Determine your approximate value for the standard deviation of the sample data.

$$\begin{aligned} &= 464 \\ &= \cancel{200}(2)(S) \end{aligned}$$

$$\begin{aligned} \text{Mean} &= \\ &= \frac{(1055 + 1983)}{2} \\ &= 1519 \end{aligned}$$

$$\text{So, } S \approx \frac{464}{2} = 232$$