

1. The lengths of the first 10 words of 2 books are listed below. Find the range, variance, and standard deviation for each of the two samples, and then compare the two sets of results.

Does there appear to be a difference in variation?

Book 1: 4, 5, 2, 4, 5, 3, 6, 4, 4

Book 2: 7, 8, 10, 4, 5, 6, 5, 12, 11, 11

Find the range for book 1

Since range = Maximum value – Minimum Value

Range= $6 - 2 = 4$ Letters

Find the range for book 2

Range= $12 - 4 = 8$ Letters

Find the variance and standard deviation for book 1.

Sample variance=
$$Var = \frac{1}{n} \sum_{i=1}^n (X_i - \bar{X})^2$$

Mean for book 1 = $(4 + 5 + 2 + 4 + 5 + 3 + 6 + 4 + 4) / 9 = 4.111$ Letters

Then Variance =
$$Var = \frac{1}{9} \sum_{i=1}^9 (X_i - 4.111)^2 = 1.3611$$

Sample standard deviation= $S.D. = \sqrt{Var} = 1.167$ Letters

(do not round until the final answer. Then round the one decimal place as needed)

Find the variance and standard deviation for book 2

Sample variance

Sample variance=
$$Var = \frac{1}{n} \sum_{i=1}^n (X_i - \bar{X})^2$$

Mean for book 2 = $(7+8+ 10+ 4+ 5+ 6+ 5+ 12+ 11+ 11)/10 = 7.9$ Letters

Then Variance = $Var = \frac{1}{9} \sum_{i=1}^9 (X_i - 4.11)^2 = 8.544$ 8.5(correct answer) *****

Sample standard deviation = $S.D. = \sqrt{Var} = 2.92$ Letters 2.9 (correct answer)*****

Yes, Here I am right 8.544 and 2.92 is right . But I did not round off my final solution that's why I did not get this answer.

(do not round until the final decimal answer. Then round to one decimal place as needed).

Is there a difference in variation between the two books?

- a. No, there's no difference variation
- b. Yes, there is much variation among the word lengths in book 1 (correct answer)*****
- c. Yes, there is much variation among the word variation in book 2.

Since Variation in book 1 is 1.36 and variation in book 2 is 8.544 clearly $1.36 < 8.544$!! thus Book2 is having more variation !!

2. Suppose a survey of 595 women in the United States found that more than 57% are the primary investors in their household. Which part of the survey represents the descriptive branch of statistics? Make an inference based on the results of the survey.

Choose the best statement of the descriptive statistic in the problem.

- a. 57% of women in the sample are the primary investor in their household
- b. There is an association between U.S. women and being the primary investor in their household (correct answer) *****
- c. 595 women were surveyed
- d. There is an association between the 595 women and being the primary investor in their household.

Yes , here you are right !!

3. Decide which method of data collection you would use to collect data for the study described below:

a. A study of how fast a fire would spread through the canopy of a forest.

Choose answer:

- a) Survey

- b) **Observational study**
- c) Experimental
- d) **Simulation (correct answer)*******

Yes , here you are right !!

4. You can find the percentile that corresponds to a specific data value x by using the following formula.

There have been 75 winners for an acting award nine winners were older than Jane Doe when they won the award.

Percentile of $x = \frac{\text{number of data value less than } x * 100}{\text{Total number of data values}}$

Since there are total $75 - 9 = 66$ students less than award winners therefore

$P = 66/75 * 100 = 88$

(Round to the nearest whole number as needed)

5. The Gallup Organization contacts 2544 male university graduates who have a white collar job and ask whether or not they had received a raise at work during the past 4 months.

- a) Male university graduates who have a white collar job and have received a raise at work
- b) Male university graduates who have a white collar job
- c) Male university graduates
- d) Male university graduates who have received a raise at work

What is the sample study?

- a) Male university graduates
- b) **Male university graduates who have a white collar job (correct answer)*******
- c) The 2544 male university graduates who have received a raise at work
- d) **The 2544 male university graduates who have a white collard job**

Yes , here you are right !!

6. Determine whether the given value is a statistic or parameter.

- a) A sample of professors is selected and it is found that 50% own a vehicle.

Choose answer:

- a) Statistic because the value is a numerical measurement describing a characteristic of a population.
- b) **Statistic because the value is a numerical describing a characteristic of a sample. (correct answer)*******
- c) **Parameter because the value is a numerical measurement describing a characteristic of a sample.**
- d) Parameter because the value is a numerical measurement describing a characteristic of a population.

Yes , here you are right !!

7. To estimate the percentage of defects in a recent manufacturing batch, a quality control manager at Daimler-Chrysler assembly line starting with the fourth until she obtains a sample of 50 vans.

What type of sampling is used?

- a) Stratified
- b) Convenience
- c) Simple random
- d) Systematic**
- e) cluster

8. The mean for statistics test scores is 64 and the standard deviation is 6.0. For the biology test scores, the mean is 21 and the standard statistics is 3.9. The test scores of a student who took both test is given below.

A student gets a 73 on the statistics test and a 24 on the biology test.

- a) Transform each test score to a z-score

For Statistics

Since we know that

$$z = \frac{x - \mu}{\sigma} = \frac{73 - 64}{6} = 1.5$$

For Biology

Since we know that

$$z = \frac{x - \mu}{\sigma} = \frac{24 - 21}{3.9} = \frac{3}{3.9} = 0.77$$

b) Determine of which test the student had a better score.

a) Transform the statistics test score to a z-score

$$z = 1.5$$

(Type an integer or a decimal rounded to the nearest hundredth as needed)

b) Transform the biology test score to a z-score

$$Z = 0.77$$

(Type an integer or a decimal rounded to the nearest hundredth as needed)

Determine on which test the student had a better score.

1. The scores on both tests are the same.
2. On the biology test the student had a better score
3. **On the statistics test the student had a better score**

9. A study shows that people who own a fax machine have more money than people who do not.

a) Make an inference based on the results of the study

b) What might this inference incorrectly imply?

1. Make an inference based on the results of the study. Choose answer below.

a. **people who do not have a fax machine have more money than those who do. (correct answer)******

b. **people who own a fax machine have more money than people who do not.**

c. people who have a fax machine have higher paying jobs than those who do not.

d. people who have a fax machine are more capable of making money.

2. What might this inference incorrectly imply?

a. This inference may incorrectly imply that if you did not own a fax machine, you would have more money than if you did.

b. This inference may incorrectly imply that people who have a fax machine have higher paying jobs than those who do not.

c. This inference may incorrectly imply that if you owned a fax machine, you would have more money than if you did not.

d. This inference may incorrectly imply that people who have a fax machine are more capable of making money.

10. During a quality assurance check, the actual coffee content (in ounces) of six jars of instant coffee was recorded as 6.03, 5.61, 6.40, 6.01, 5.99, and 6.02.

Answers: 6.01, 6.015, 5.950, 6.015 (correct answer)*****

There is no QUESTION !!!

a. Find the mean and the median of the coffee content

The mean coffee content is ?

$$(6.03 + 5.61 + 6.40 + 6.01 + 5.99 + 6.02) / 6 = 6.01 \text{ ounces}$$

(Round to three decimal places as needed)

b. the third value was incorrectly measured and is actually 6.04. Find the mean and the median of the coffee content again.

The median coffee content is ?

Arranging ascending order of the numbers, then we have two middle numbers

$$\text{Then median is } = (6.01 + 6.04) / 2 = 6.02$$

ounces.

(Round to three decimal places as needed)

d. which measure of central tendency, the mean or the median was affected by the data entry error?

Both are affected by error

After correcting the data error, the mean coffee content is ?

Before replacement of the error mean is = 6.01 ounces

After replacement of the error mean is = 6.0155 ounces

$$\text{Error} = 6.0155 - 6.01 = 0.0055$$

(Round to three decimal places as needed)

Which measure of central tendency, the mean or the median was affected by the data entry error?

a. **Mean (correct answer)*******

b. **Median**

Yes , here you are right !!