



Standard deviation WorkSheets

Q.1: Answer the following questions.

- How do you define standard deviation in statistics?
- What are the steps to calculate standard deviation?
- Are there separate formulas for population and sample standard deviation? If so then write those formulas.

Q.2: Fill in the blanks.

- Standard deviation can never be _____.
- ___ is the notation used for sample standard deviation.
- Variance is the _____ of standard deviation.
- \bar{X} means _____.
- The variance for a set that has a standard deviation of 4 is _____.

Q.3: Match the columns.

Set	Standard deviation
140, 143, 139, 131, 7	67.768
70, 77, 198, 119, 16	46.583
34, 17, 57, 46, 97	60.723
16, 137, 106, 175, 74	58.864
102, 130, 61, 68, 174	30.078



Solutions

Q.1:

a) Standard Deviation is a statistic that measures the dispersion of a dataset relative to its mean and is calculated by taking the square root of the variance.

b) (b.1) Calculate the number of values.

(b.2) Find N-1.

(b.3) Find the mean of the dataset.

(b.4) Next, calculate the difference between each value from the mean.

(b.5) Take the square of these differences and add them.

(b.6) Divide this value by N-1.

(b.7) Take the square root.

c) Yes, both sample and population standard deviation are calculated using separate formulas.

Sample:

$$s = \sqrt{\frac{1}{N-1} \sum_{i=1}^N (x_i - \bar{x})^2}$$

Population:

$$\sigma = \sqrt{\frac{1}{N} \sum_{i=1}^N (x_i - \mu)^2}$$

Q.2:

- a) Negative
- b) S
- c) Square
- d) Sample mean
- e) 16

Q.3:

The standard deviations are:

a) 140, 143, 139, 131, 7 = 58.864

b) 70, 77, 198, 119, 16 = 67.768

c) 34, 17, 57, 46, 97 = 30.078

d) 16, 137, 106, 175, 74 = 60.723

e) 102, 130, 61, 68, 174 = 46.583