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| Name of Faculty:  **MR. AMIT TRIPATHI**  Institute**: RAJKIYA ENGINEERING COLLEGE, BANDA**  Email ID (as submitted in the registration form): ***amittri13@gmail.com***  Discipline to which the Lab belongs**: ELECTRICAL**  Name of the Lab: **BASICS OF MATHEMATICS**  Name of experiment : **TO FIND THE STANDARD DEVIATION**  (only one Experiment per worksheet. for submitting more than one experiments, please fill up another worksheet):  Kindly Refer these documents before filling the worksheet   1. Coursework (MOOC ) on Pedagogy , Storyboard , Lab Manual : <http://bit.ly/Vlabs-MOOC> 2. Additional Documentation booklet for reference.<http://vlabs.iitb.ac.in/vlabs-dev/document.php> 3. Sample Git Repository. : https://github.com/nancy2502/virtual-lab |

* 1. **FOCUS AREA:**

In statistics, the standard deviation is a measure of the amount of variation or dispersion of a set of rules. A low standard deviation indicates that the values tend to be close to the mean (also called the expected value) of the set, while a high standard deviation indicates that the values are spread out over a wider range.

* 1. **About the Experiment:**

**Standard Deviation measures how widely spread data points are.**

1. **If data values are all equal to one another, then the standard deviation is zero.**
2. **If a high proportion of data points lie near the mean value, then the standard deviation is small.**
3. **An experiment that yields data with a low standard deviation is said have high precision.**
4. **If a high proportion of data points lie far from the mean value, then the standard deviation .**

**2. Instructional Strategy:**

Standard deviation is widely used in experimental and industrial settings to test models against real-world data. An example of this in industrial applications is quality control for some product. Standard deviation can be used to calculate a minimum and maximum value within which some aspect of the product should fall some high percentage of the time. In cases where values fall outside the calculated range, it may be necessary to make changes to the production process to ensure quality control.

**2.2 Assessment Method:**

Standard deviation are often used in norm-reference tests to diagnose language impairment. Those scores that fall within one SD of the mean are considered to be typically developing. Disability is often diagnosed at 1. To 2.0 SD below the mean. However research has demonstrated that using standard deviation to diagnose language impairment does not accurately identity language impairment with acceptable specificity and sensitivity.

**2.3 Description of sections:**

The Standard Deviation of a set of data describes the amount of variation in the data set by measuring, and essentially averaging, how much each value in the data set varies from the calculated mean. The formula for standard deviation depends on whether you are analyzing population data, in which case it is called or estimating the population standard deviation from sample data which is called s.

**3. Task & Assessment Questions**

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| **Sr No.** | **Learning Objective to be met** | **Tasks to be performed by the students** | **Assessment questions aligned to the task** |
| **1** | Calculate the mean | Take the individual value of. | Provide written description of the characteristics of a distribution that affect the standard deviation. |
| **2** | Analyze the importance of standard deviation in terms of understanding data | to find out µ. | Write a descriptive definition of the standard deviation that does not involve mathematical symbols. |

**4. Simulation Interactions**

**This simulation estimation and plots the sampling distribution of various statistics. You specify the population, sample size and statistics. An animated sample from the population is shown and the statistics is plotted. This can be repeated to estimate the sampling distribution. CONCEPTS: sampling distribution, standard deviation, standard error, central limit theorem, mean, median, efficiency, fluctuation, skew, normal distribution.**