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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. Aim and Objective**

To find out Standard Deviation.

**2. Theory**

**Standard Deviation is a statistical measure of the precision for a series of repeated measurements. The advantage of of using s to quote uncertainty in a result is that it has the same unit as the experiment data.**

**Standard Deviation is calculated from-**

**S=**

Where N=no. of measurement

Xi=each individual measurement

=mean of all measurements

The quantity (x-) is called the “residual” or “deviation from the mean” for each measurement. The quantity (N) is called the “degree of freedom” for the measurement.

Relative Standard Deviation-

The relative standard deviation is useful for comparing the uncertainty between different measurements. The relative standard deviation is calculated from the standard deviation S an

RSD={}1000ppt

%-RSD=()100%

The %- RDS is also called the “coefficient of variance” or CV.

**3. Procedure**

1. Work out the mean (the simple average of the numbers)

2. Then for each number: subtract the mean and square the result.

3. Then work out the mean of those squared difference.

4. Take the square root of that and we are done.

**4.Pre test Assessments**

1. A national random sample of 20 ACT scores from 2010 is listed below. Calculated the sample mean and standard deviation.

29,26,13,23,23,25,17,22,17,19,12,26,30,30,18,14,12,26,17,18

a. 20.50, 5.79

b. 20.50, 5.94

c. 20.85, 5.79

**d. 20.85, 5.94**

5. **Post test Assessments**

2. .Provided that the ACT is reasonably normally distributed with a mean of 18 and standard deviation of 6, determine the proportion of students with a 33 or higher.

a. 0.0062

b. 0.0109

c. 0.0124

d. 0.0217

3. Given the following data pairs (x, y), find the regression equation.

(1, 1.24), (2, 5.23), (3, 7.24), (4, 7.60), (5, 9.97), (6, 14.31), (7, 13.99), (8, 14.88), (9, 18.04), (10, 20.70)

1. y=0.490x-0.053
2. y=2.04x
3. y=1.98x + 0.436
4. y=0.49x

**6. References:**

The standard deviation of a reference range (usually referred to if not otherwise specified) originated in what is most prevalent in a reference group taken form the general (i.e. total) population. This is the general reference range. However, there are also optimal health range (range that appear to have the optimal health impact) and range for particular condition or statuses ( such as pregnancy reference ranges for hormone levels).