Lab. Meteorological Statistics ........ Fourth stage

(First Semester)

Department of Atmospheric Sciences

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***C- The standard deviation***

The standard deviation of a set of N values ,, is denoted ( S )

**1- Calculation the Standard deviation for unclassified data:**

**SD =**

***For example***\\ calculate the standard deviation of the following data?

**( 2,3.5,4,4.5,5)**

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 3 | 3-4=-1 | 1 |
| 3.5 | 3.5-4= -0.5 | 0.25 |
| 4 | (4-4) = 0 | 0 |
| 4.5 | (4.5-4 )= 0.5 | 0.25 |
| 5 | (5-4)= 1 | 1 |
|  |  |  |

SD = =

**H.W \\ find the standard deviation from the following data :**

**( 2,8,3,7,6,4)**

**2-Calculation the standard deviation of the classified data:**

The standard deviation some times called root mean square deviation ( Rms ) if ,, is mid point of classes and ,, is frequency the standard deviation can be by :

**SD =**

***For example***\\ calculate The Standerd deviation of the following data?

|  |  |  |  |
| --- | --- | --- | --- |
| **Class** |  |  |  |
| 15-19 | 3 | 17 |  |
| 20-24 | 5 | 22 |
| 25-29 | 7 | 27 |
| 30-34 | 15 | 32 |
| 35-39 | 10 | 37 |
| 40-44 | 6 | 42 |
| 45-49 | 4 | 47 |
|  | =50 |  |

**SD =**

# = 32.8

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Class** |  |  |  |  |  |  |
| 15-19 | 3 | 17 | 51 | -15.8 | 249.64 | 748. 92 |
| 20-24 | 5 | 22 | 110 | -10.8 | 116.64 | 583.2 |
| 25-29 | 7 | 27 | 189 | -5.8 | 33.64 | 235.48 |
| 30-34 | 15 | 32 | 480 | -0.8 | 0.64 | 9.6 |
| 35-39 | 10 | 37 | 370 | 4.2 | 17.64 | 176.4 |
| 40-44 | 6 | 42 | 252 | 9.2 | 84.64 | 507.8 |
| 45-49 | 4 | 47 | 188 | 14.2 | 201.64 | 806.56 |
|  | =50 |  | =1640 |  |  | =3068 |

SD =  