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| LeaDING uNIVERSITY,SYLHET |
| ASSINGMENT : MAT-2213 |
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**Submitted by:**

Name : Pias Das

ID : 1512020201

Batch : 38th (E)

Submitted to:

Name : Dr.Md.Azizul Baten

(Assistant Professor Department of Mathematics, SUST)

email - baten\_math@yahoo.com

**Ans to the quation number : 1**

**Measures of Central Tendency and Dispersion:**

These univariate statistics help describe the distribution of a variable.  They each tell you something different about what the distribution looks like.

**Measures of Central Tendency:**

Tell you the value that the "typical" case in the distribution has for your variable.

**Measures of Dispersion:**

Tell you how much variation you have across cases in the distribution of your variable.

**Central Tendency**

***Mode***

* Nominal measure
* Most frequently occurring value in the distribution
* NOT the number of times that value occurs

***Median***

* Ordinal measure
* The "middle" of the distribution when all cases are arranged in rank order
* The value of the case that lies at the point at which 50% have a lower value and 50% have a higher value.

***Mean***

* Interval/Ratio
* The arithmetic mean, or what is typically referred to as the *average*
* Σ *x* / *n*
* Sum (Σ) of all values in the distribution (*x*) divided by the number of cases (*n*)
* Denoted as an *x* with a bar over it (for sample data) or μ (for population data)

**Measures of Dispersion**

***Variation Ratio***

* Nominal
* Simply the proportion of cases that are not in the modal category
* 1-*p*[Mode]
* 1 minus the proportion of all cases in the modal category
* Limited utility

***Range***

* Ordinal
* Difference between the two extremes of the distribution
* Highest value found in the distribution minus the lowest value found in the distribution
* Limited utility

***Standard Deviation***

* Interval/Ratio
* Roughly the "average" amount of deviation in a distribution
* Actually the square root of the average sum of squares.
* denoted as *s* (for sample data) or σ (for population data)
* http://academic.kellogg.edu/mckayg/buad112/web/pres/UNIT_42.gif
  + Take the difference (deviation) between the value of each case from the mean and square it
  + Sum all the squared deviations.  This result is called the *variation*, or *sum of squares*.
  + Divide by the number of cases, *n*.  (Use *n* − 1 for sample data.)  This result is called the *variance*.
  + Take the square root.

**Ans to the quation number : 2**

1. Calculate average number of defective bulbs produced per day:

|  |  |  |  |
| --- | --- | --- | --- |
| Class Interval of defective bulbs | Number of day | Mid-point | f \* x |
| 0-5 | 12 | 2.5 | 30 |
| 5-10 | 8 | 7.5 | 60 |
| 10-15 | 16 | 12.5 | 200 |
| 15-20 | 20 | 17.5 | 350 |
| 20-25 | 4 | 22.5 | 90 |
|  | Total = 60 |  | =730 |

Average number =

=

= 12.1607 (Ans)

1. Find median number of defective bulbs

|  |  |  |
| --- | --- | --- |
| Class interval of defective bulbs | Number of day | Cumulative frequency |
| 0-5 | 12 | 12 |
| 5-10 | 8 | 20 |
| 10-15 | 16 | 36 |
| 15-20 | 20 | 56 |
| 20-25 | 4 | 60 |

= 60

Median = L +

Here,

n = 60

fn = 16

= 20

h = 5

L = 10

= 10 +

= 10 + (30 – 20) 0.3125

= 10 + 10 0.3125

= 10 + 3.125

= 13.125 (Ans)

1. Find mode of distribution of defective bulbs.

Here,

= 4

= 16

h = 5

L = 15

Mode , = L +

= 15 +

= 15 +

= 15 + 1

= 16 (Ans)