**What is Expected Value actually?**

is the variable or a random variable which contains observations / values / numbers.

is the number of observations in variable

e.g.

And so on.

So, it is clear that **Expected Value** is nothing but the **Average / Arithmetic Mean**.

For group data let’s recap the arithmetic mean for group data.

In group data, we have either a data set in a variable called along with its corresponding frequencies or classes in which we obtain mid – points by taking arithmetic mean of lower-class limit and upper-class limit.

**Discrete Grouped Data**

|  |  |  |  |
| --- | --- | --- | --- |
| **Persons having Number of Children** | **No. of Persons (Frequency)** | **Relative Frequency** | **x (Relative Frequency)** |
|  |  |  |  |
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|  |  |  |  |
|  |  |  |  |
| **Total / Sum** |  |  |  |

**Traditional Method for finding Arithmetic Mean of Grouped Data**

|  |  |  |
| --- | --- | --- |
| **Persons having Number of Children** | **No. of Persons (Frequency)** | **x (Frequency)** |
|  |  |  |
|  |  |  |
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|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
| **Total / Sum** |  |  |

**Mathematically**

In sampling distribution, the word Relative Frequency replaced as *p.d.f.* or *p.m.f.* i.e., or etc.

**The sampling distribution of**

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | **(Equivalent to Relative Frequency)** |  |
|  |  |  |  |
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|  |  |  |  |
| **Total / Summation** |  |  |  |

**Let’s see the same question with traditional method**

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| --- | --- | --- |
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|  |  |  |
| **Total / Summation** |  |  |