# Victoria University of Bangladesh

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# RES 431

## Ans: to the Q: NO: (1)

In Maths an average of a list of data is the expression of the central value of data. Mathematically, It is defined as the ratio of summation of all the data to the number of units present in the list. In terms of statistics, the average of a given set of numerical data is also called mean. For example the average of 2,3 and 4 is $(2+3+4)/3 = 9/3 = 3$. So here 3 is the central value of 2,3 and 4. Thus, the meaning of average is to find the mean value of a group of numbers.

major 10 characteristics of a good average:

① Simplicity

② Representation

(3) Rigidly Defined.
(4) Algebraic Treatment.
(5) Clear and stable Definition.
(6) Absolute Number
(7) Effect of fluctuation of Sampling
(8) Not affected by skewness
(9) Based on all values a variable
(10) NO Effect of Extreme values.

Ans: to the Q: NO: (2)

In research, variables are any characteristics that can take on different values such as height age temperature or test scores.

Researchers often manipulate or measure independent and dependent variables in studies to test cause and effect relationships.

- The independent variable is the cause. Its value is independent of other variables in your study.
- The dependent variable is the ~~cause~~ effect. It value depends on changes in the independent variable.

Independent and dependent variables

| Independent variable<br>Type of treatment (level) | Dependent variable<br>Blood pressure |
|---|---|
| Level 1<br>Low dose of the new medication | No change in blood Pressure |
| Level 2<br>High dose of the new medication | Blood pressure is lowered |
| Level 3<br>placebo | No change in blood pressure |

Ans: to the Q: NO: (3)

A chi - square ($\chi^2$) statistic is a test that measures how a model compares to actual observed data. The data used in calculating a chi - square statistic must be random, raw, mutually exclusive, drawn from independent variables, and drawn from a large enough sample. For example, the results of tossing a fair coin meet these critria.

if you have taken 10 samples from the normal distribution, then df = 10. The degrees of freedom in a chi square distribution is also its mean. In this example, the mean of this particular distribution will be 10. chi square distributions are always right skewed.

The distribution of $\chi^2$ with $(r-1)(c-1)$ degrees of freedom (DF), is represented in the table given below. Here, r repesents the number of rows in the two way table

and c represents the number of columns.

| DF | Value of P | | |
|---|---|---|---|
| | 0.05 | 0.01 | 0.001 |
| 1 | 3.84 | 6.64 | 10.83 |
| 2 | 5.99 | 9.21 | 13.82 |
| 3 | 7.82 | 11.35 | 16.27 |
| 4 | 9.49 | 13.28 | 18.47 |
| 5 | 11.07 | 15.09 | 20.52 |
| 6 | 12.07 | ~~15.80~~ 16.81 | ~~20.52~~ 22.46 |
| 7 | 14.07 | 18.48 | 24.32 |
| 8 | 15.51 | 20.09 | 26.13 |
| 9 | 16.92 | 21.67 | 27.88 |
| 10 | 18.31 | 23.21 | 29.59 |

## Ans: to the Q: No: (4)

A report is a specific form of writing that is organised around concisely identifying and examining issues, events, or findings that have happened in a physical sense such as events that have occurred within an organisation, or findings from a research investigation.

1. Simplicity: The report should be simple.
2. clarity: A report should be absolutely clear.
3. Brevity: The report should be brief and to the point
4. Accuracy: The scientific accuracy of facts is essential to a good report.
5. Make a plan before you write.

6. Check whether there's an in-house format.
7. Include a table of contents
8. Add a summary.
9. Include an introduction.
10. Present your findings.