

ASSIGNMENT # 01

SPRING-2020

Program: BS (MMC)

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Course Title: BASIC STATISTICS

Instructor : Raza Ahmed Khan

Total marks: 30

Important Instructions:

- Assignment should be submitted within 6 – days.
- Submitted Document's format should be in word, pdf or in jpg.
- No Assignment will be accepted after due date mentioned above.
- Note: Attempt All Questions

Question No: 01

Fill the following statements with appropriate words and options:

(1- Each)

1. Statistics is the word which use to measure data
2. Figures belongs with photographic data.
3. Attributive study of the data belongs with errors within.
4. Measuring system Is the process which separate data in homogeneous groups.
5. The graph which construct on behalf of continuous group of data is called as line graph
6. The Grading score of the students belongs with ordinal measurement scale.
7. Today's temperature was recorded at 32° F, lies in the category of continuous measurement scale.
8. Statistics has very limited number of usage in advance research studies. (F)
9. Number of dots in a single line is very good example of countable data. (T)
10. Qualitative data do not belong with the field of Statistics. (F)

Question No: 02

- a) Describe the relevant fields and branches of Statistics.

Answer :

Before directly digging into fields and branches I want to explain what statistics is.

Definition :

Statistics is the procedure or techniques which deals with numerical facts and figures and analyze it symmetrically.

History :

The word statistics is taken from the word stat and it is aspect of enumeration and it deals with numerical facts. It is converting data in a way to make it more useful.

Statistics was found in Germany in 1940's. Most of the evidence shows that it was also being used in politics.

Field and branches of statistics :

When we talk about statistics in general there are two main branches of statistics ;

1. Descriptive statistics
2. Inferential statistics

Descriptive statistics :

It is basically describing the data and that what the data looks like. It is presenting data in an informative way.

Collecting, summarizing and analysing data.

Inferential statistics :

Inferential statistics in my mind certainly this is where we want to be. In other words drawing an accurate conclusion.

Using data collected from a small group to draw conclusions about a large group.

In addition inferential statistics has its own types.

b) How could you elaborate the "Importance and Applications of Statistics".

Answer :

To begin with, the way statistics can help in everyday life and every field might be surprising!

Generally importance of statistics :

Statistics will be used by everyone if they studied this. Because when it comes to statistics a person will have a tool box that will allow him or her to understand a lot things better.

In addition often people think that with statistics people might be behind a computer all day doing nothing but I strongly believe that data can benefit every community and every population. Anyone knowing statistics can become an expert at data collection and data analysis, consulting on data matters, or presenting the results of the data analysis and that can take a person to around the world. Because, right now everybody needs quantitative evidence and statistics to support their decision making. I find it hard to write the name of any field in which statistics is not important.

Digging deep into statistics and it's uses in journalism ;

Statistics in journalism :

Journalists use statistics in their job everyday and for pretty much everything they do it is essential. In fact it helps about how they write stories , how they edit them, and even every story they read that might consider them as good follow ups.

More importantly, the news about business budgets and so on comes out with charts and graphs it is all statistical data. In addition journalism deals with number. Number of people either in small or large numbers. Statistics is very essential.

Statistics in different fields ;

Journalism

Sports

Finance

Healthcare

Agriculture

National security

Research

Investment

Business

Environmental scam

Video game development

Medicine

And the list goes on...

Conclusion :

In conclusion it is very important helps to gain knowledge, make money and save lives.

Question No: 03

(4+ 6+ 4)

- a) "The initial techniques which are usually preferred during transformation of data towards information are mostly recommendable during presentation of data." Elaborate the above mentioned statement precisely.

Answer :

To begin with data transformation is the procedure in which the structure of data converts from one to another.

At the beginning mostly data is not in a well structured format. Therefore, it is hard to understand it properly. Hence it is being summarized in the first then and processed and then analyzed.

Due to this fact no matter how knowledgeable and informative the data is if it is not properly structured and understandable it will make no sense. Therefore it will cause complications and the waste of the data itself.

Therefore with the help of statistical information it is structured either graphically or in other methods such as tables etc.

This keeps the data understandable and the readers interested as well which is really necessary.

- b) Construct an appropriate frequency distribution for the following data related to an experimental yield.

93, 89, 75, 97, 75, 47, 73, 40, 100, 42, 39, 75, 13, 39, 89, 78, 32, 72, 51, 21, 92, 45, 29, 58, 16, 31, 6, 82, 76, 10, 10, 32, 2, 25, 98, 94, 93, 91, 68, 20, 19, 61, 37, 98, 72, 61, 72, 19, 81, 78.

Q-3

Construct frequency distribution for the following:

93, 89, 75, 97, 75, 47, 73, 40, 100,
42, 39, 75, 13, 39, 89, 78, 32, 72, 51
21, 92, 45, 29, 58, 16, 31, 6, 82, 76,
10, 10, 32, 2, 25, 98, 94, 93, 91, 68,
20, 19, 61, 37, 98, 72, 61, 72, 19,
81, 78.

Step 1:

$$R = X_{\max} - X_{\min} = 100 - 2 = 98$$

Step 2:

$$K = 1 + 3.33 (\log N) = 1 + 3.33 \log(50) \\ = 6.657 \approx 7$$

Step 3:

$$\frac{R}{K} = \frac{98}{7} = 14$$

Step 4 Frequency Distribution

S#	Classess	Tally Bar	Frequency (f)
1	I-C-B-II.C-B 1 - 14		6 (f ₁)
2	15 - 28		7 (f ₂)
3	29 - 42	I	11 (f ₃)
4	43 - 56		3 (f ₄)
5	57 - 70	■ ■	5 (f ₅)
6	71 - 84		15 (f ₆)
7	85 - 98		12 (f ₇)
8	99 - 112		1 (f ₈)

$$\Sigma f = 60$$

Step 5

Cummulative Frequency

$$F_1 = f_0 + f_1 = 0 + 6 + 6$$

$$F_2 = F_1 + f_2 = 6 + 7 + 13$$

$$F_3 = F_2 + f_3 = 13 + 11 + 24$$

$$F_4 = F_3 + f_4 = 24 + 3 + 27$$

$$F_5 = F_4 + f_5 = 27 + 5 + 32$$

$$F_6 = F_5 + f_6 = 32 + 15 + 47$$

$$F_7 = F_6 + f_7 = 47 + 12 + 59$$

$$F_8 = F_7 + f_8 = 59 + 1 + 60$$

Step 6

Relative Frequency

$$\frac{F_1}{\sum F} \times 100 = 10\% \quad \frac{F_5}{\sum F} \times 100 = 8.33\%$$

$$\frac{F_2}{\sum F} \times 100 = 11.66\% \quad \frac{F_6}{\sum F} \times 100 = 25\%$$

$$\frac{F_3}{\sum F} \times 100 = 18.33\% \quad \frac{F_7}{\sum F} \times 100 = 20\%$$

$$\frac{F_4}{\sum F} \times 100 = 5\% \quad \frac{F_8}{\sum F} \times 100 = 1.66\%$$

$$99.8\% = 100\%$$

c)

Step 7 Class Boundaries

$$\frac{\text{L.C.L (2nd)} - \text{U.C.L (1st)}}{2} = \frac{15 - 14}{2} = \frac{1}{2} = 0.5$$

2

Class Boundaries (C.B)

$$0.5 - 14.5$$

$$14.5 - 28.5$$

$$28.5 - 42.5$$

$$42.5 - 56.5$$

$$56.5 - 70.5$$

$$70.5 - 84.5$$

$$84.5 - 98.5$$

$$98.5 - 112.5$$

Step 8 Class Mid Point (x)

$$\frac{\text{L.C.L} + \text{U.C.L}}{2} = \frac{1 + 14}{2} = 7.5$$

$$= \frac{15 + 28}{2} = 21.5$$

$$= \frac{29 + 42}{2} = 35.5$$

$$= \frac{43 + 56}{2} = 49.5$$

$$= \frac{57 + 70}{2} = 63.5$$

$$= \frac{71 + 84}{2} = 77.5$$

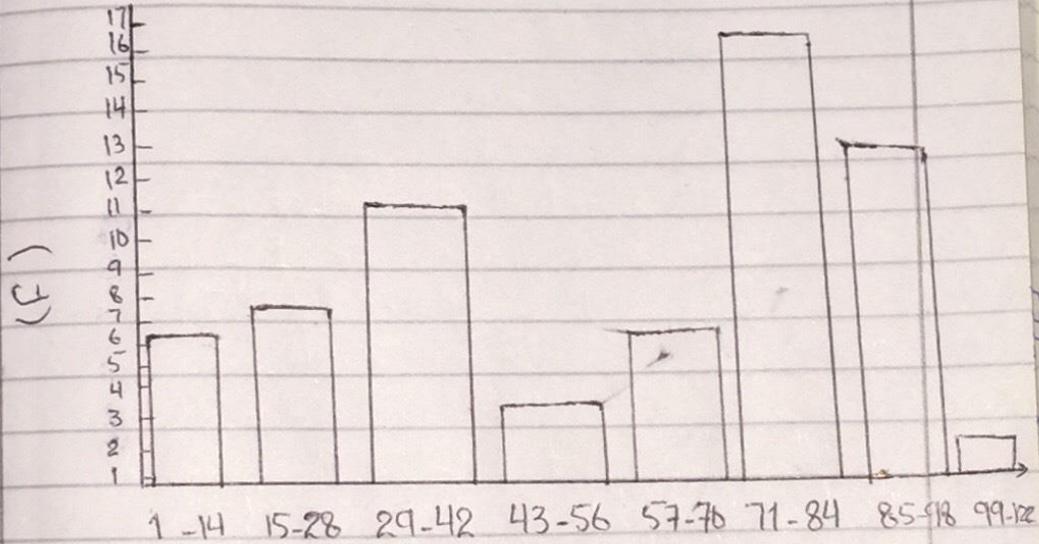
$$= \frac{85 + 98}{2} = 91.5$$

$$= \frac{99 + 112}{2} = 105.5$$

Simple Bar Graph & Histogram

Q#3 (c)

Bar Graph



Histogram

