

Assignment No.1 (Course STA301) Fall 2011 (Total Marks 30)

Assignment.1 (Lessons 1-10)

Question 1:

Marks: 5+5=10

i) From the table given below, Find

(a) Class boundaries

(b) How many men fall in the age of 50 or above?

(c) How many men fall between the age group of 60 and 69?

Sol.

(a)

Age Group (Men)	f	Class Boundary
20-29	5	19.5 – 29.5
30-39	4	29.5 – 39.5
40-49	5	39.5 – 49.5
50-59	8	49.5 - 59.5
60-69	12	59.5 – 69.5
70-79	16	69.5 – 79.5
Total	50	

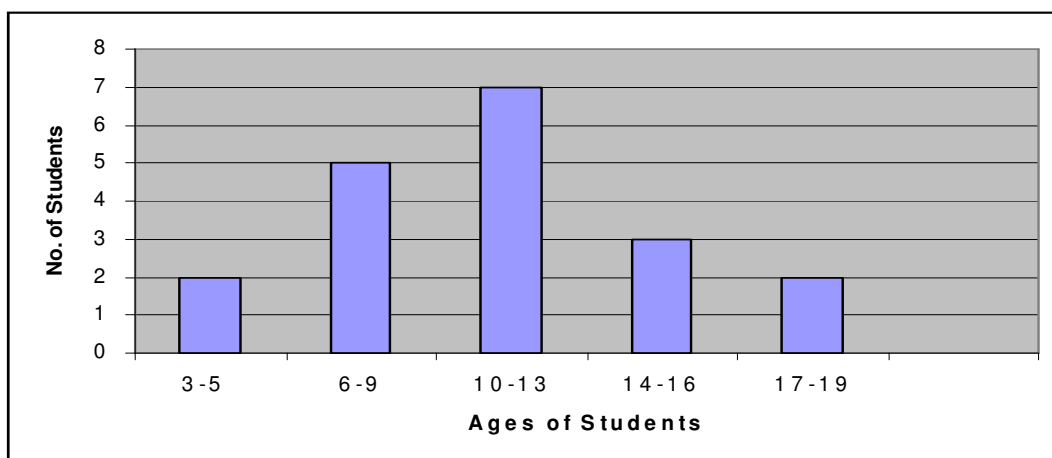
(b) How many men fall in the age of 50 or above?

Sol. 36 men fall in the age of 50 or above

(c) How many men fall between the age group of 60 and 69?

Sol. 16 men fall between the age group of 60 and 69

(ii) Write down the following figure in the form of frequency table and also find the relative frequency.



Sol.

Age Group (Men)	f	Relative Frequency
3 – 5	2	0.11
6 - 9	5	0.25
10 - 13	7	0.37
14 - 16	3	0.16
17 - 19	2	0.11
Total	19	1

Question 2:

Marks: 5+5=10

(i) Calculate the mode from the following continuous distribution.

Height	Number (f)
57.5-60.0	6
60.0-62.5	26
62.5-65.0	190
65.0-67.5	281
67.5-70.0	412
70.0-72.5	127
72.5-75.0	38
Total	1080

$$\text{Mode} = l + \frac{(f_m - f_1) \times h}{(f_m - f_1) + (f_m - f_2)}$$

$$l = 67.5, f_m = 412, f_1 = 281, f_2 = 127, h = 2.5$$

$$\begin{aligned} \text{Mode} &= 67.5 + \frac{(412 - 281) \times 2.5}{(412 - 285) + (412 - 127)} \\ &= 67.5 + \frac{131 \times 2.5}{131 + 285} \\ &= 67.5 + \frac{327.5}{416} \\ &= 67.5 + 0.787 \\ &= 68.287 \end{aligned}$$

(ii). Use the stem and leaf plot to answer these questions.

Statistics Test Scores	
Stem	Leaf
6	1 1 4 6 7 8
7	2 3 5 7 9
8	1 3 5 6 6 7 7 8 9
9	0 0 3 4 6 8 9 9
10	0 0

- What is the best test score?
- How many students take the test?
- How many students scored 90?
- What is the lowest score?
- Find the difference between the high and low scores.

Sol. According to me this is wrong Question

Question 3:

Marks: 3+3+4=10

- Find the median for the following discrete frequency distribution.

Number of pupils per class	Number of Classes
20	1
21	0
22	1
23	3
24	6
25	9
26	8
27	10
28	7
Total	45

Ans.

Number of pupils per class	Number of Classes	C. F
20	1	1
21	0	1
22	1	2
23	3	5
24	6	11
25	9	20
26	8	28
27	10	38
28	7	45
Total	45	

Median = $(n+1) / 2$ th term
 = $(45 + 1) / 2$ th term
 = $46/2$ th term
 = 23 th term
 23rd lies in cf column at 28
 So median is
 = 26

(ii) Calculate the weighted mean from the following data

Item	Expenditure	Weights	WX	
Food	290	7.5		
Rent	54	2.0		

Clothing	98	1.5	
Fuel and light	75	1.0	
Other items	75	0.5	

Sol.

Item	Expenditure	Weights	WX
Food	290	7.5	2175
Rent	54	2.0	114
Clothing	98	1.5	147
Fuel and light	75	1.0	75
Other items	75	0.5	37.5
Total		12.5	2548.5

$$\begin{aligned}
 \text{Weighted Mean} &= \sum WX / \sum W \\
 &= 2548.5 / 12.5 \\
 &= 203.88
 \end{aligned}$$

(iii) A man gets a rise of 10% in salary at the end of his first year of service and further of 20 % and 25 % at the end of the second and third year respectively. The rise in each case is calculated on his salary at the beginning of the year. To what annual percentage increase is this equivalent?

Sol.

Let the salary is 100

Than 10% increase mean 110

20% increase mean 120

25% increase mean 125

$$1/3$$

$$GM = (110 \times 120 \times 125)^{1/3}$$

I have no calculator so solve and write ur ans .