Assignment # 01

Name : Abdullah

Enrollment: 02-131222-099

Class : BS(CS) 3-A

Subject: Probability and Statistics

Question # 01:

Solution:

Arrange the raw data into ascending order.

21, 25, 26, 27, 28, 29, 29, 30, 31, 32, 32, 33, 33, 33, 33, 34, 35, 35, 36, 36, 36, 37, 37, 37, 38, 39, 39, 40, 41, 41, 42, 42, 43, 44, 44, 45, 46, 46, 47, 48, 48, 50, 51, 52, 52, 53, 54, 54

for ideal number of classes, by Sturges method.

$K = 1 + 3.33 \log n$

$K = 1 + 3.33 \log(50)$

$K = 6.65$

$K = 7$ approx

determine the Class width,

Class width = Range / No. of Classes

$= 33/7$

$= 4.7$ or 5 approx

Range = max value - min value

$= 54 - 21$

$= 33$

C.B	C.I	f	cf	c.m(x)	rf
20.5 - 24.5	21 - 25	2	2	23	0.04
25.5 - 29.5	26 - 30	6	8	28	0.12
30.5 - 34.5	31 - 35	11	19	33	0.22
35.5 - 39.5	36 - 40	10	29	38	0.2
40.5 - 44.5	41 - 45	9	38	43	0.18
45.5 - 49.5	46 - 50	6	44	48	0.12
50.5 - 54.5	51 - 55	6	50	53	0.12
		$\Sigma f = 50$			

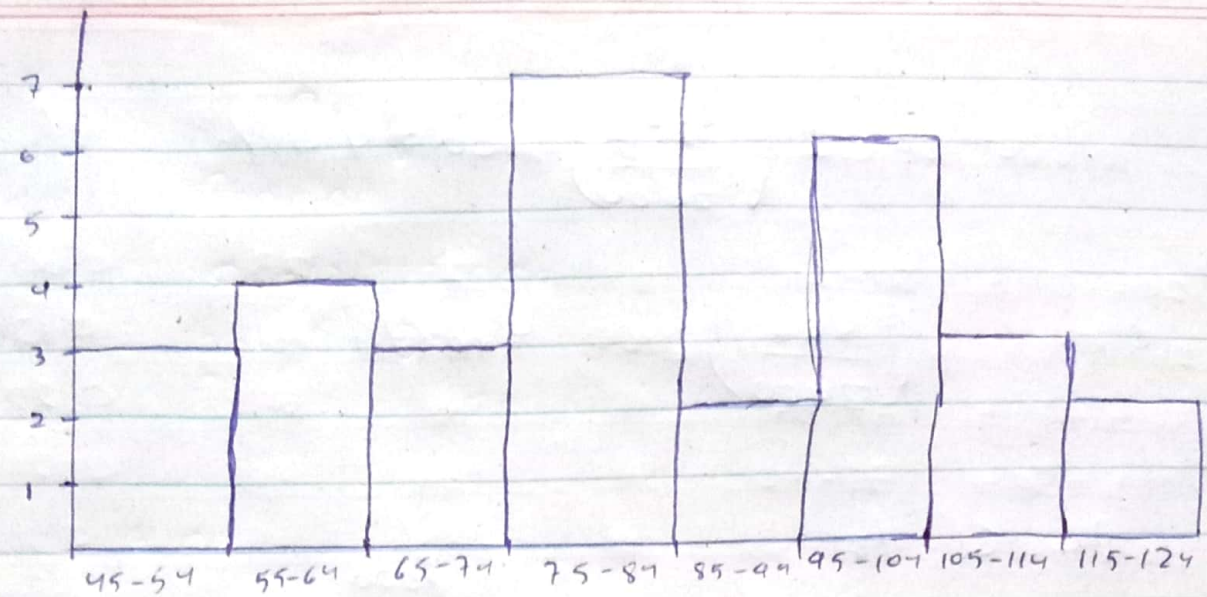
Question # 02

solution

sort the data:

49, 52, 52, 56, 59, 62, 64, 65, 72, 74, 76, 77, 82, 83, 84, 85, 88, 89, 90, 91, 95, 96, 96, 97, 99, 101, 103, 104, 105, 109, 110, 116, 118.

class intervals	frequency
45 - 54	3
55 - 64	4
65 - 74	3
75 - 84	7
85 - 94	2
95 - 104	6
105 - 114	3
115 - 124	2



Question # 03

Solution

Total expenditure = food + clothing + Housement + medicine + Others
= 950 + 320 + 500 + 330 + 400
= 2400

Next, we determine the percentage of each expenditure

$$\text{food} = \left(\frac{950}{2400}\right) \times 100 = 39.58\%$$

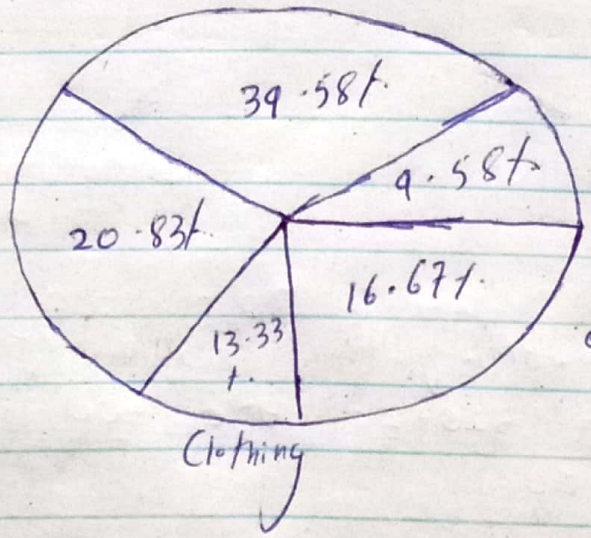
$$\text{Clothing} = \left(\frac{320}{2400}\right) \times 100 = 13.33\%$$

$$\text{Rent} = \left(\frac{500}{2400}\right) \times 100 = 20.83\%$$

medical care = $\left(\frac{230}{2400}\right) \times 100 = 9.58\%$

Others = $\left(\frac{400}{2400}\right) \times 100 = 16.67\%$

Pie Chart =



Question # (04)

a

solution

mean = $\frac{(123+116+122+110+175+120+125+111+118}{10}$

$= \frac{1257}{10}$

= 125.7 hours

median: since there are 10 samples (even) we take average of 5th and 6th value

$$= \frac{118 + 120}{2}$$

$$= 119 \text{ hours}$$

b

solution

The major difference is due to an outlier. In given sample, 175 is an outlier as majority of values lie between 110, 125.

median: since there are 10 samples (even)
we take averaged 5th and 6th value

$$= \frac{118 + 120}{2}$$

$$= 119 \text{ hours}$$

b

solution:

The major difference is due to an outlier. A given sample, 175 is an outlier as majority of values lie between 110, 175.