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Section: 10

Course : STA201

Assignment: 1

Ans to the Q: N: 1 (a)

(i)

There are 10 variables listed in table 1.

(ii)

Variable	Type
Model Model	Qualitative
Engine size	Quantitative
Cylinders	Quantitative
Transmission	Qualitative
Number of gears	Quantitative
Fuel	Qualitative
Vehicle Class	Qualitative
city MPH	Quantitative
Hwy MPH	Quantitative
Model year	Quantitative

Ans to the Q.N: 1(b)

Vehicle Class	frequency
Small SUV	2
large Car	1
Small Car	2
midsize Car	3
Standard SUV	2
	Total: 10

for pie chart,

$$\text{Proportion} = \frac{\text{frequency}}{\text{total}} \times \cancel{\text{total}} \times 360^\circ$$

$$\therefore \text{Proportion of small } \overset{\text{car}}{\cancel{\text{SUV}}} = \frac{2}{10} \times 360^\circ$$

$= 72^\circ$

$$\begin{aligned}\text{Proportion of large car} &= \frac{1}{10} \times 360^\circ \\ &= 36^\circ\end{aligned}$$

$$\begin{aligned}\text{,, small car} &= \frac{2}{10} \times 360^\circ \\ &= 72^\circ\end{aligned}$$

$$\begin{aligned}\text{,, midsize car} &= \frac{3}{10} \times 360^\circ \\ &= 108^\circ\end{aligned}$$

$$\begin{aligned}\text{,, standard SUV} &= \frac{2}{10} \times 360^\circ \\ &= 72^\circ\end{aligned}$$

Pie chart:



Ans to the Q: N: 1 (c)

Table 2: Frequency distribution of Transmission by
Number of gears

Transmission	Number of gears				Total
	5	6	7	8	
Automatic	0	3	0	4	7
Manual	1	1	1	0	3
Total	1	4	1	4	10

(i)

There are total 7 automatic cars. and 3 manual cars. As automatic has the highest frequency, modal response for the variable 'Transmission' is automatic.

(ii)

(a) Proportion of vehicles ~~with~~ that have 7 gears

$$= \frac{1}{10} \times 100\% = 10\%$$

(iii)

Proportion of automatic vehicles that have

$$8 \text{ gears} = \frac{4}{7} \times 100\% = 57.14\%$$

(iv)

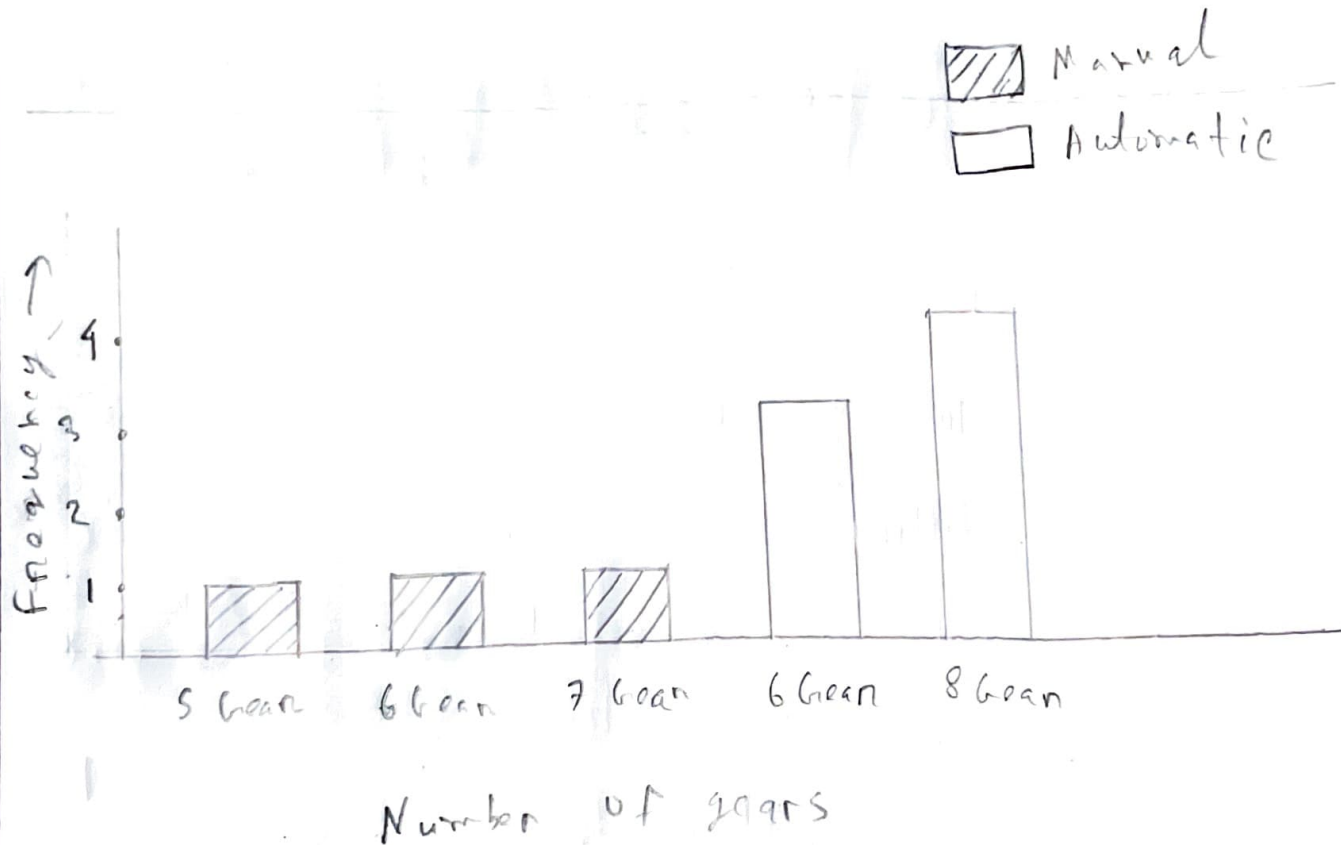
Proportion of vehicles with 6 gears

$$\text{that are Manual} = \frac{1}{4} \times 100\%$$

$$= 25\%$$

(v)

Representing bar chart of table 2:



Ans to the Q: N: 1(d)

HWY MPH	Tally	Frequency	Relative frequency	cumulative relative frequency
15-20		1	0.1	0.1
20-25		1	0.1	0.2
25-30	 	4	0.4	0.6
30-35		2	0.2	0.8
35-40		2	0.2	1
		Total = 10		

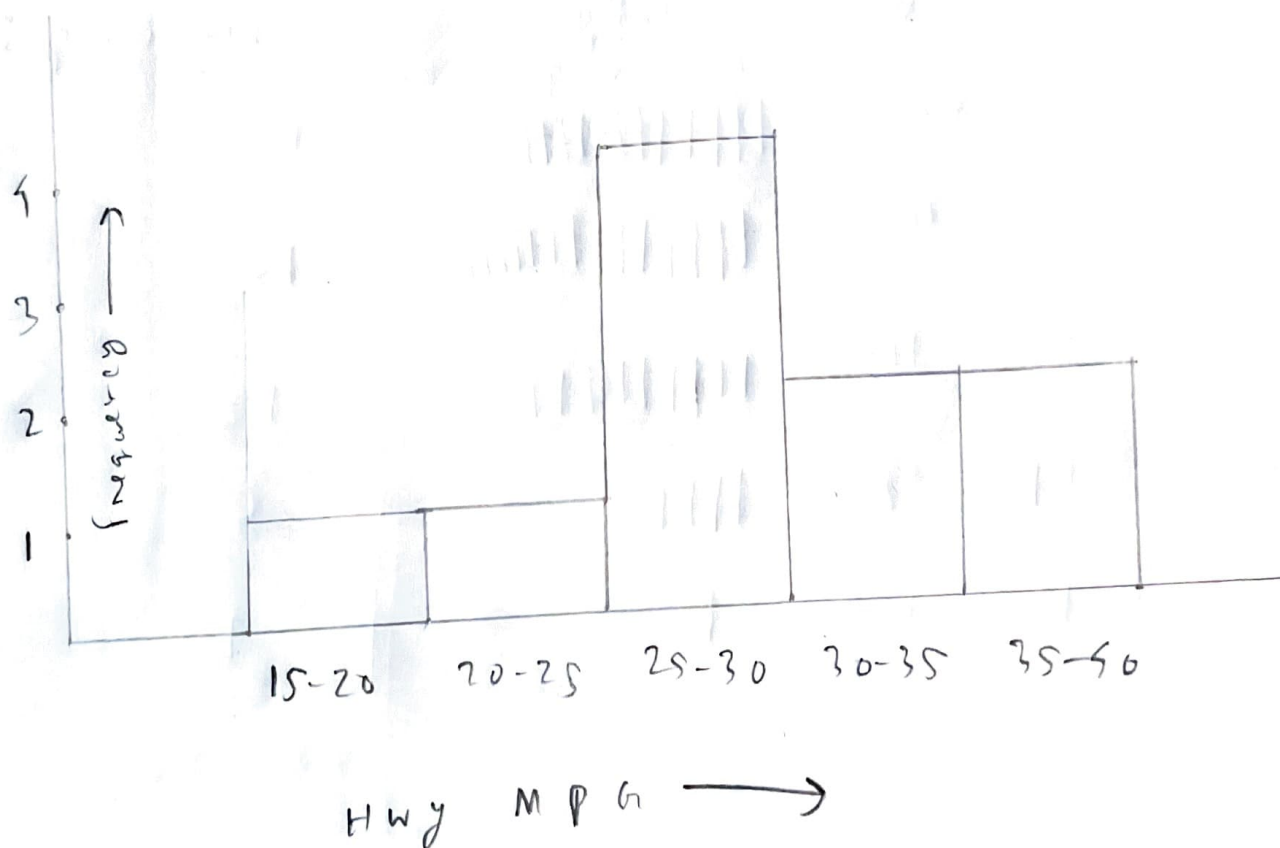
(i)

Proportion of vehicles that have mileage between
20 and 30 MPH = $\frac{4}{10} \times 100\%$
= 50%.

(ii)

Proportion of vehicles that have mileage of
at least 30 mpg = $\frac{2+2}{10} \times 100\%$
= 40%.

(iii)



Ans to the Qⁿ: 2

(i)

Lowest temperature = $85^{\circ}F$

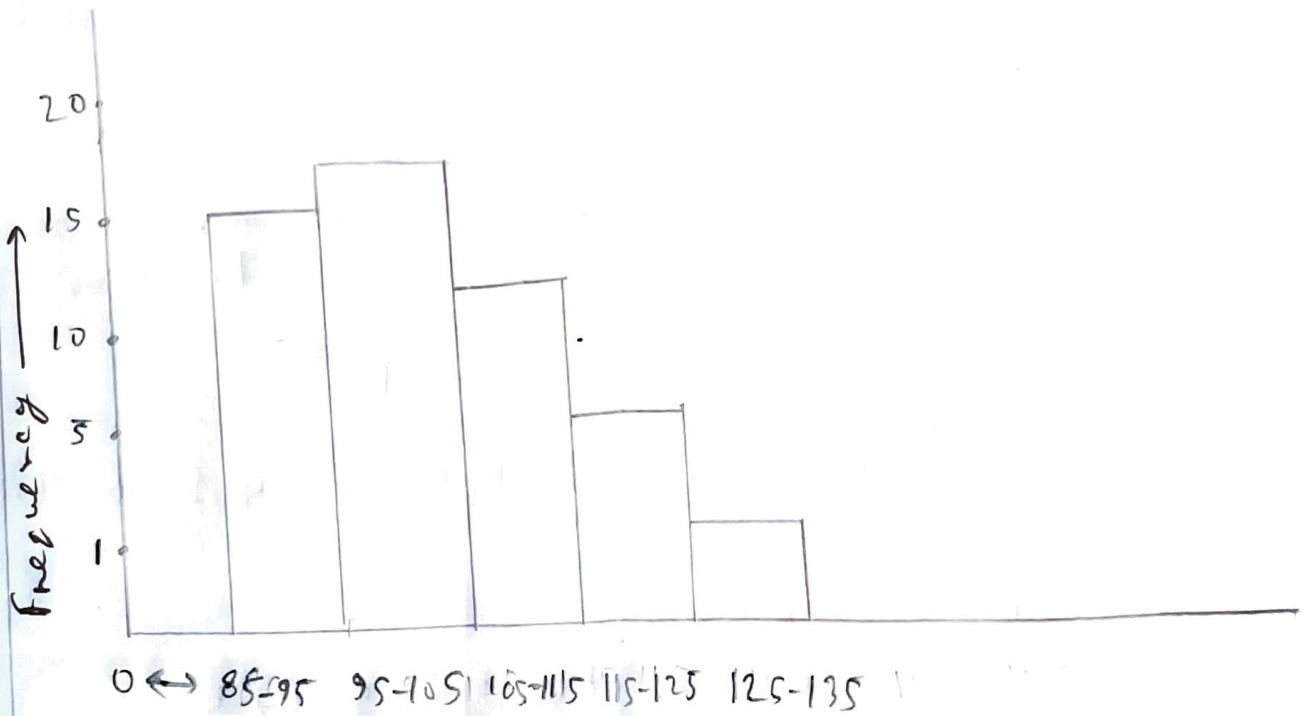
Highest temperature = $125^{\circ}F$

Frequency distribution table is shown below:

Class interval	Tally	Frequency
85 - 95		15
95 - 105		12
105 - 115		12
115 - 125		5
125 - 135		1

Total = 50

(ii)



Temperature →

Figure: Histogram of the data table

from (i)

Ans to the Q.N: 3

Stem and leaf display is given below:

Am leaf	Stem	Fn leaf
	8	1
4, 0, 5, 3, 5, 1, 0, 2, 0, 7, 5, 1	9	0, 0, 6, 4, 5, 6, 3, 2
4, 2, 3, 9	10	2, 5, 6, 3,
6, 0, 3, 6,	11	6, 9, 1, 3
8, 5, 6	12	3, 2, 5, 5, 2, 8
8	13	7
	14	
	15	8
2	16	

Sorted stem and leaf table for given data:

Am leaf	Stem	fn leaf
	8	
0, 0, 0, 1, 1, 2, 3, 4, 5, 5, 5, 7	9	0, 0, 2, 3, 4, 5, 6, 6
2, 3, 4, 9	10	2, 3, 5, 6
0, 3, 6, 6	11	1, 3, 6, 9
0, 5, 8	12	2, 2, 3, 5, 5, 8
8	13	2
	14	
	15	8
2	16	

Here, leaf means the last digit of the movie duration and stem means the rest of the digits.

for example,

$$\text{stem} = 10 \quad \text{leaf} = 9$$

$$\therefore \text{duration} = 109$$

from the table, we see that both American and French movies have 90-99 minutes duration in most of the movies. But the number of American movies in 90-99 minutes range ~~are~~ is greater than the number of French movies in this range.

The shortest American movie is ^{at} 70 minutes and shortest French movie is of 81 minutes. Longest movie for American movies is 162 minutes and the longest French movie is on 158 minutes.

There are more French movies in 120 - 129 minute range than American movies.