Solution for Exercise.

Chapter (1)

1(b)

Step 1 : Order the values (ascending)

0.0	0.1	0.1	0.1	0.1	0.2	0.2
0.3	0.5	0.6	↑ Q1 0.7	0.7	1.2	1.3
1.5	1.5	1.7	1.9	2.4	2.6	2.8
3.1	3.1	3.2	3.5	3.7	4.1	4.4
4.6	4.9	4.9	5.5	6.1	6.6	7.9
8.0	8.0	8.9	8.9	11.0	12.7	13.7

$n = 42$

Step 2: find the Bin size / Bin width.

$$\text{Bin Size} = \frac{2 \times IQR}{\sqrt[3]{n}} \longrightarrow (1)$$

$$IQR = Q_3 - Q_1 \longrightarrow (2)$$

Quartile, Q_1 is at $0.25(n+1)$

$= 0.25(43) = 10.75$

$\therefore Q_1 = \frac{0.6+0.7}{2} = 0.65$

Quartile 3, Q_3 is at $0.75(n+1)$

$= 0.75(43) = 32.25$

$Q_3 = \frac{5.5+6.1}{2} = 5.8$

$IQR = 5.8 - 0.65 = 5.15$

Substitute in (1)

$$\text{Bin size} = 2 \times \frac{5.15}{\sqrt[3]{42}}$$

$$= \frac{10.3}{3.5}$$

$$= 2.94$$

$$\approx 3$$

Step 3: find the number of bins

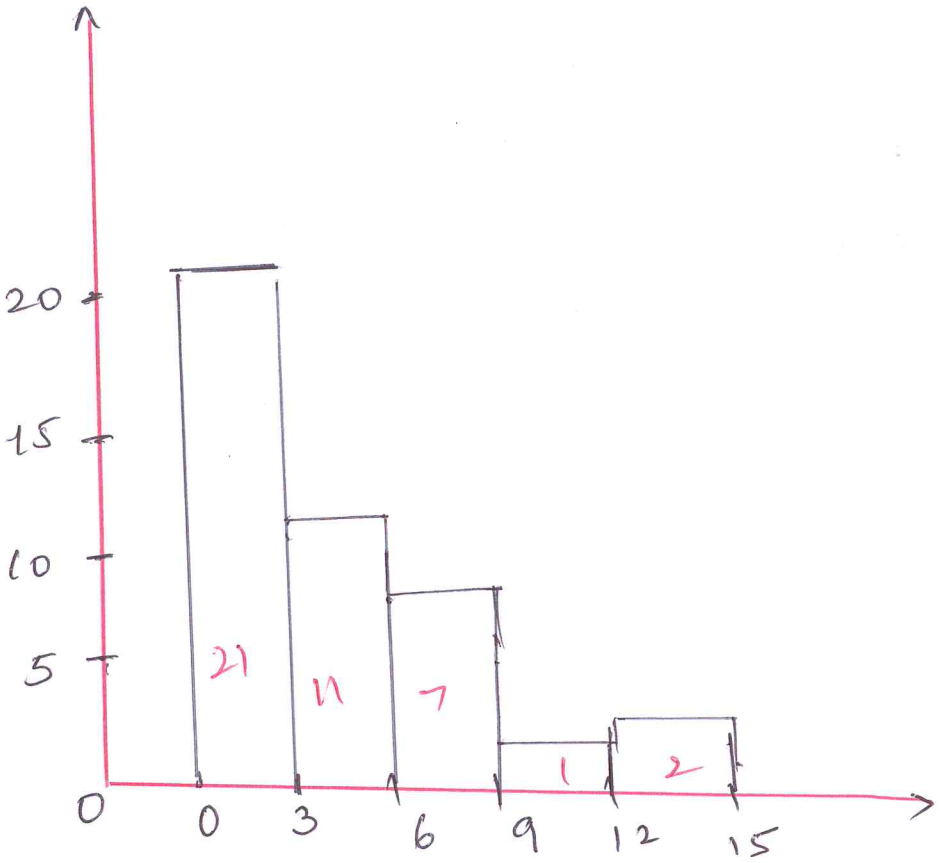
$$\text{No. of bins} = \frac{\text{Max} - \text{Min}}{\text{Bin size}}$$

$$= \frac{15 - 0}{3} = 5$$

Step 4: Build frequency distribution table.

class	frequency
0-3	21
3-6	11
6-9	7
9-12	1
12-15	2

Step 5: Plot the histogram.


20
15
10
5
0
21
11
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15