

EX 1

a)

INTERVAL	X	f	rf	%i	Fi	CRF	ci%	X ²	f·X ²	f·X _i
20-25	22.5	10	0.143	14.3	10	0.143	14.3	506.25	5062.5	225
25-30	27.5	12	0.171	17.1	22	0.314	31.4	756.25	9075	330
30-35	32.5	8	0.114	11.4	30	0.428	42.8	1056.25	8450	260
35-40	37.5	20	0.286	28.6	50	0.714	71.4	1406.25	28125	750
40-45	42.5	11	0.157	15.7	61	0.871	87.1	1806.25	19868.75	467.5
45-50	47.5	4	0.057	5.7	65	0.928	92.8	2256.25	9025	190
50-55	52.5	5	0.071	7.1	70	1	100	2756.25	13781.25	262.5
TOTAL		70	1	100				10548.75	93387.5	2485

$$b) \text{Mdn} = L_i + \frac{I}{f_i} \left(\frac{n}{2} - F_i \right) = 34.5 + \frac{6}{20} (35 - 30) = 34.5 + 0.3 \cdot 5 = 34.5 + 1.5 = 36.5$$

$$n/2 = 70/2 = 35$$

$$I = \text{max} - \text{min} = 40.5 - 34.5 = 6$$

$$c) Q = \frac{Q_3 - Q_1}{2} = \frac{40.85 - 28.25}{2} = \frac{12.6}{2} = 6.3$$

$$Q_3 = L_i + \frac{I}{f_i} \left(\frac{i \cdot n}{k} - F_i \right) = 39.5 + \frac{6}{11} (52.5 - 50) = 39.5 + 0.54 \cdot 2.5 = 39.5 + 1.35 = 40.85$$

$$\frac{i \cdot n}{k} = \frac{3 \cdot 70}{4} = \frac{210}{4} = 52.5$$

$$Q_1 = L_i + \frac{I}{f_i} \left(\frac{i \cdot n}{k} - F_i \right) = 24.5 + \frac{6}{12} (17.5 - 10) = 24.5 + 0.5 \cdot 7.5 = 24.5 + 3.75 = 28.25$$

$$\frac{i \cdot n}{k} = \frac{1 \cdot 70}{4} = 17.5$$

$$d) S^2 = \frac{\sum f_i \cdot X_i^2}{n} - \bar{X}^2 = \frac{93387.5}{70} - 35.5^2 = 1334.11 - 1260.25 = 73.86$$

$$\bar{X} = \frac{\sum f_i \cdot X_i}{n} = \frac{2485}{70} = 35.5$$

e) Histogram or frequency polygon

$$1) z = \frac{X - \bar{X}}{S} = \frac{34 - 35.5}{8.59} = \frac{-1.5}{8.59} = -0.17$$

$$S = \sqrt{S^2} = \sqrt{73.86} = 8.59$$

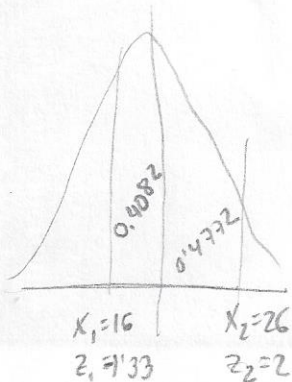
X =

EXERCISE 2

$$\bar{X} = 20$$

$$S = 3$$

a)



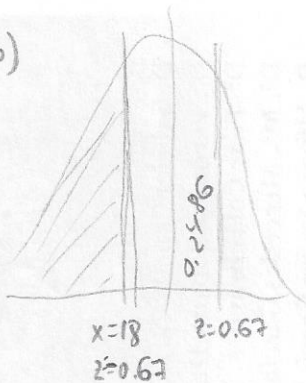
$$z_1 = \frac{X - \bar{X}}{S} = \frac{16 - 20}{3} = \frac{-4}{3} = -1.33$$

$$z_2 = \frac{X - \bar{X}}{S} = \frac{26 - 20}{3} = \frac{6}{3} = 2$$

$$p = 0.4082 + 0.4772 = 0.8854$$

88.54%

b)

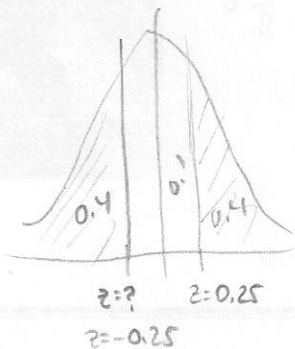


$$z = \frac{X - \bar{X}}{S} = \frac{18 - 20}{3} = \frac{-2}{3} = -0.67$$

$$p = 0.5 - 0.2486 = 0.2514$$

25.14%

c)

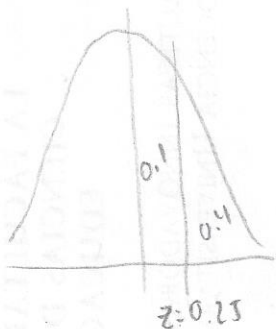


$$z = \frac{X - \bar{X}}{S} \Rightarrow -0.25 = \frac{X - 20}{3}$$

$$-0.75 = X - 20$$

$$19.25 = X$$

d)



$$z = \frac{X - \bar{X}}{S} \rightarrow 0.25 = \frac{X - 20}{3}$$

$$0.75 = X - 20$$

$$20.75 = X$$