(3) Coefficient of variance = $\frac{\text{Standard deviation}}{\text{mean}(\bar{x})} \times 100\%$

$= \frac{6.94}{20.4} \times 100 = 34\%$

(4) Group B is the one with less variable distribution.

(2) coefficient of variation = $\frac{50}{\text{mean}(\bar{x})} \times 100 = \frac{9.05}{17.83} = 51\%$

$\therefore .51\%$

Table for B

CI	f	x	fx	$f\|x-\bar{x}\|$	$f\|x-\bar{x}\|^2$
1-5	2	3	6	34.28	587.56
6-10	4	8	32	48.56	589.52
11-15	7	7	18	49.78	356.86
16-20	20	20	18	42.8	90.6
21-25	16	16	22	45.76	130.88
26-30	10	10	28	78.6	617.8
31-35	4	4	33	51.44	661.52
			1269		3035.74

$\text{mean}(\bar{x}) = \frac{\Sigma fx}{\Sigma f} = \frac{1269}{63} = 20.14$

(i) $M.D = \frac{\Sigma f|x-\bar{x}|}{\Sigma f} = \frac{351.42}{63} = 5.58$

(ii) $S.D = \sqrt{\text{variance}}$

$= \sqrt{\frac{\Sigma f(x-\bar{x})^2}{\Sigma f}} = \sqrt{\frac{3035.74}{53}} = \sqrt{48.19} = 6.94$

$\Sigma f(A) = 29 \quad \Sigma f(B) = 63$

M.D $= \frac{\Sigma f|x-\bar{x}|}{\Sigma f}$ for grouped data.

for A : $\bar{x} = \frac{\Sigma fx}{\Sigma f} = \frac{517}{29} = 17.83$ for A' $x = 3$

Table of A

CI	f	x	fx	$f\|x-\bar{x}\|$	$f\|x-\bar{x}\|^2$
1-5	0	3	0	0	0
6-10	7	8	56	68.81	676.41
11-15	10	13	130	48.3	233.3
16-20	2	18	36	0.34	0.06
21-25	1	23	23	5.17	25.73
26-30	5	28	140	50.85	517.15
31-35	4	33	132	60.68	920.52
			517	234.15	2374.17

① mean $(\bar{x}) = \frac{\Sigma fx}{\Sigma f} = \frac{517}{29} = 17.83$

mean deviation $= \frac{\Sigma f|x-\bar{x}|}{\Sigma f} = \frac{234.15}{29} = 8.07$

② Standard deviation = $\sqrt{\text{variance}}$

$= \sqrt{\frac{\Sigma f(x-\bar{x})^2}{\Sigma f}} = \sqrt{\frac{2374.17}{29}} = 9.05$

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Question

(1) A study of yellow fever disease [YFD] was conducted. The study was restricted to patients under the age of 40. One purpose was to compare the distribution of cases by age, in "group A" to that of "group B".

The group data are given below.

CI	Group A	Group B
1-5	0	2
6-10	7	4
11-15	10	7
16-20	2	20
21-25	1	16
26-30	5	10
31-35	4	4

Calculate

(i) The mean and standard deviation of each group

(ii) The co-efficient of variation for each group

(iii) Which group has less variable distributions.