Olivia Minamara Adu
19/ENG03/1004
Civil Engineering

Group A

C.I	f	class boundry	x	f(x)	$(x-\bar{x})_A$	$f(x-\bar{x})^2_A$	$f\|x-\bar{x}\|_A$
1-5	0	0.5 — 5.5	3	0	-14.83	0	0
6-10	7	5.5 — 10.5	8	56	-9.83	676.41	68.81
11-15	10	10.5 — 15.5	13	130	-4.83	233.30	48.30
16-20	2	15.5 — 20.5	18	36	0.17	0.06	0.34
21-25	1	20.5 — 25.5	23	23	5.17	26.73	5.17
26-30	5	25.5 — 30.5	28	140	10.17	517.15	50.85
31-35	4	30.5 — 35.5	33	132	15.17	920.52	60.68
	$\Sigma f = 29$			$\Sigma f(x)$		$\Sigma f(x-\bar{x})^2$	$\Sigma f\|x-\bar{x}\|$
				$\Sigma = 517$		$= 2403.87$	$= 234.15$

1.) mean of group $A(\bar{x})_A = \frac{\Sigma fx}{\Sigma f} = \frac{517}{29} = 17.83$

Standard deviation $= \sqrt{\frac{\Sigma f(x-\bar{x})^2_A}{\Sigma f - 1}} = \sqrt{\frac{2403.87}{29-1}} = \sqrt{\frac{2403.87}{28}}$

$= 9.27$

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

Coefficient of variation $= \frac{S\Delta}{mean} \times 100$

$= \frac{9.27}{17.83} \times 100 = 51.99$

Group B

C.I	f	Class boundry	x	fx	$(x-\bar{x})_B$	$f(x-\bar{x})^2_B$	$f\|x-\bar{x}\|_B$
1-5	2	0.5 - 5.5	3	6	-17.14	587.56	34.28
6-10	4	5.5 - 10.5	8	32	-12.14	589.52	48.56
11-15	7	10.5 - 15.5	13	91	-7.14	356.86	49.98
16-20	20	15.5 - 20.5	18	360	-2.14	91.60	42.80
21-25	16	20.5 - 25.5	23	368	2.86	130.88	45.76
26-30	10	25.5 - 30.5	28	280	7.86	617.80	78.60
31-35	4	30.5 - 35.5	33	132	12.86	661.52	51.44
	$\Sigma f = 63$			$\Sigma f(x)$		$\Sigma f(x-\bar{x})^2_B$	$\Sigma f\|x-\bar{x}\|_B$
				$= 1269$		$= 3035.74$	$= 351.42$

i] mean of group B $(\bar{x}) = \frac{1269}{63} = 20.14$

Standard deviation $= \sqrt{\frac{\Sigma f(x-\bar{x})_B}{\Sigma f - 1}} = \sqrt{\frac{3035.74}{63-1}} \sqrt{\frac{3035.74}{62}} =$

$= 6.997 \approx 7.00$

mean deviation $= \frac{\Sigma f|x-\bar{x}|_B}{\Sigma f} = \frac{351.42}{63} = 5.58$

ii] Coefficient of variation $= \frac{SD}{mean} \times 100$

$= \frac{7}{20.14} \times 100 = 34.76$

iii] Group B has less variable distribution.