

NAME: Ugokwe Fortune

Matric No: 19/ENG06/05a

Department: Mechanical Engr.

Mean deviation Group A

Class Interval	x	\bar{x}	F	Fx	$ x-\bar{x} $	$(x-\bar{x})^2$	$F(x-\bar{x})^2$
1-5	3	17	0	0	14	196	0
6-10	8	17	7	56	9	81	567
11-15	13	17	10	130	4	16	160
16-20	18	17	2	36	1	1	2
21-25	23	17	1	23	6	36	36
26-30	28	17	5	140	11	121	605
31-35	33	17	4	132	16	256	1024
			29	497			2394

$$\bar{x} = \frac{\sum fx}{\sum f} = \frac{497}{29} = 17.13 \approx 17$$

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

$$\text{variance} = \frac{\sum f(x-\bar{x})^2}{\sum f} = \frac{2394}{29} = 82.55$$

$$\text{Standard deviation} = \sqrt{82.55}$$

$$= 9.085$$

$$= 9.1$$

Group B

C.I	F	x	Fx	$ x-\bar{x} $	$(x-\bar{x})^2$	$F(x-\bar{x})^2$
1-5	2	3	6	17	289	578
6-10	4	8	32	12	144	576
11-15	7	13	91	7	49	343
16-20	20	18	360	2	4	80
21-25	16	23	368	3	9	144
26-30	10	28	280	8	64	640
31-35	4	33	132	13	169	676
	63		1269			3037

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

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

$$\begin{aligned}\text{Variance} &= \frac{\sum f(x - \bar{x})^2}{\sum f} = \frac{3037}{63} \\ &= 48.21\end{aligned}$$

$$\begin{aligned}\text{Standard deviation} &= \sqrt{48.21} \\ &= 6.94 \\ &\approx 6.9\end{aligned}$$

ii) Group A;

$$\text{C.V.} = \frac{\text{standard deviation}}{\text{mean}} \times 100$$

$$= \frac{9.1}{17} \times 100 = 53.52$$

$$\text{C.V.} \approx 53.5$$

Group B;

$$\text{C.V.} = \frac{\text{Standard deviation}}{\text{mean}} \times 100$$

$$= \frac{6.9}{20} \times 100 = 34.5$$

$$\text{C.V.} = 34.5$$

iii) The group with the less variable distribution is group B.