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Mechanical Engineering

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STAT32 Assignment

a

Mean and Standard deviation for group A.

Cl	f	x	fx	$x - \bar{x}$	$(x - \bar{x})^2$	fd^2
1-5	0	3	0	-14.83	219.93	0
6-10	7	8	56	-9.83	96.63	676.41
11-15	10	13	130	-4.83	23.33	233.3
16-20	2	18	36	0.17	0.0289	0.0578
21-25	1	23	23	5.17	26.73	26.73
26-30	5	28	140	10.17	103.44	517.15
31-35	4	33	132	15.17	230.13	920.52
	29		517			

$$\text{Mean, } \bar{x} = \frac{\sum fx}{\sum f} = \frac{517}{29} = 17.83$$

$$\text{Standard deviation} = \sqrt{\frac{\sum fd^2}{\sum f}}$$

$$= \sqrt{\frac{2374.19}{29}}$$

$$= \sqrt{81.87}$$

$$\text{Standard deviation} = 9.05$$

Mean and Standard deviation for Group B.

Cl	f	x	fx	$x - \bar{x}$	d^2	fd^2
1-5	2	3	6	-17.14	293.78	587.56
6-10	4	8	32	-12.14	147.38	589.52
11-15	7	13	91	-7.14	50.98	356.86
16-20	20	18	360	-2.14	4.16	83.2
21-25	16	23	368	2.86	8.19	130.88
26-30	10	28	280	7.86	61.78	617.8
31-35	4	33	132	12.86	165.38	661.52
	63		1269			3027.34

$$\text{Mean} = \frac{\sum fx}{\sum f} = \frac{1269}{63} = 20.14$$

$$\text{Standard deviation} = \sqrt{\frac{\sum fd^2}{\sum f}}$$
$$= \sqrt{\frac{3027.34}{63}}$$

$$\text{Standard deviation} = 6.93$$

$$\text{Coefficient of variation for Group A} = \frac{\text{Standard deviation}}{\text{mean}} \times 100$$

$$= \frac{9.05}{17.93} \times 100 = 50.76\%$$

$$\text{Coefficient of variation for group A} = 50.76\%$$

$$\text{Coefficient of variation for Group B} = \frac{\text{Standard deviation}}{\text{Mean}} \times 100$$

$$= \frac{6.93}{20.14} \times 100 = 34.41\%$$

iii-) The group with less variable distribution is group A.