

Name: Prince. A. Brown

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Dept: Mechatronics

STAT 132

CT	x	f_A	f_B	$f_A / x - \bar{x}_A ^2$	$f_B / x - \bar{x}_B ^2$	f_A^*	f_B^*
1-5	3	0	2	0	439.746	0	6
6-10	8	7	4	$\frac{568575}{841}$	386.3258	56	32
11-15	13	10	7	$\frac{1916000}{841}$	163.1391	130	91
16-20	18	2	20	1.219	$\frac{500}{841}$	36	360
21-25	23	1	16	26.753	$\frac{360000}{841}$	23	368
26-30	28	5	10	517.39	1034.78	140	280
31-35	33	4	4	920.879	920.8085	132	132
$\Sigma =$		29	63	2374.1379	3373.4243	517	1269

$$\textcircled{1} \bar{x} = \frac{\sum fx}{\sum f}$$

$$\bar{x}_A = \frac{\sum fx}{\sum f_A} = \frac{517}{29} = 17.8276$$

$$\bar{x}_B = \frac{\sum fx}{\sum f_B} = \frac{1269}{63} = 20.1429$$

$$S.D. - \sigma_B = \sqrt{\frac{\sum f_B (x - \bar{x}_B)^2}{\sum f_B - 1}} = \sqrt{\frac{3373.4243}{63-1}}$$

$$= \sqrt{\frac{3373.4243}{62}}$$

$$= \sqrt{\frac{3373.4243}{62}}$$

$$= \underline{\underline{7.3763}}$$

$$= S.D. - \sigma_A = \sigma_A = \sqrt{\frac{\sum f_A (x - \bar{x}_A)^2}{\sum f_A - 1}} = \sqrt{\frac{2374.7379}{29-1}}$$

$$= \sqrt{\frac{2374.7379}{28}}$$

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$$= \underline{\underline{9.2093}}$$

$$\textcircled{ii} \quad CV_A = \frac{\sigma_A}{\bar{x}_A} \times 100 = 51.651\%$$

$$= \frac{9.2081}{17.8276} = \underline{\underline{51.651\%}}$$

$$CV_B = \frac{\sigma_B}{\bar{x}_B} \times 100 = 36.619\%$$

$$= \frac{7.3763}{20.1429} \times 100 = \underline{\underline{36.619\%}}$$

iii) Group B has less variable distribution and is homogenous.