

Wisdom Friday Johnny

Civil Engineering

19/ENG03/015

### STA 132 Assignment

### Assignment Answers

#### Group A

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

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

$$\text{Standard deviation} = \sqrt{\frac{\Sigma f(x-\bar{x})^2}{\Sigma f - 1}} = \sqrt{\frac{2403.87}{28}} = 9.27$$

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

$$2.) \text{ Coefficient of variation} = \frac{\text{S.D}}{\text{Mean}} \times 100$$

$$\Rightarrow \frac{9.27}{17.83} \times 100 \Rightarrow 51.99 = 52$$

## Group B

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

$$1.) \text{ Mean of group B } (\bar{x})_B = \frac{\Sigma fx}{\Sigma f} = \frac{1269}{63} = 20.14$$

$$\text{Standard deviation} = \sqrt{\frac{\Sigma f(x - \bar{x})_B^2}{\Sigma f - 1}} = \sqrt{\frac{3035.74}{62}} = 7.00$$

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

$$2.) \text{ Coefficient of variation} = \frac{\text{SD}}{\text{Mean}} \times 100$$

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

3.) Group B has less variable distribution