

# **IQRA NATIONAL UNIVERSITY**

**Name : Furqan Junaid**

**ID : [15518](#)**

**BBA 3rd Semester**

**Basic Statistics Assignment**

**Submitted to :Sir Raza Ahmed**

①

Date: / / 20

Answer of Question No ①  
Part (A)

F.x	F. log x	F/x
4	0	4
26	3.91	6.5
27	4.29	3
16	2.40	1
5	0.64	0.2
78	11.29	14.7

$$G.M. = \text{Antilog} \left( \frac{\sum F \cdot \log(x)}{N} \right)$$

$$= \text{Antilog} \left( \frac{11.29}{31} \right)$$

$$= \text{Antilog} (0.36)$$

$$= 2.29$$

$$H.m = \frac{\sum F}{\frac{\sum F}{x}} = \frac{31}{14.7} = 2.10$$

$$A.M = \frac{\sum F \cdot x}{N} = \frac{78}{31} = 2.51$$

Page ①

Signature

Answer of Question No ① Part ②

Date: 1 / 20

class Boundaries	Mid Points	F	F · x	F · log(x)	F/x	cum. freq
0.5-9.5	4.5	2	9	1.30	0.44	2
9.5-19.5	14.5	31	449.5	36.00	2.13	33
19.5-29.5	24.5	73	1788.5	101.40	2.97	106
29.5-39.5	34.5	85	2932.5	130.71	2.46	191
39.5-49.5	44.5	28	1246	46.15	0.62	
		219	6425.5	315.56	8.62	

$$G.M = \text{Antilog} \left( \frac{\sum f \cdot \log(x)}{N} \right) = \text{Antilog} \left( \frac{315.56}{219} \right)$$

$$\text{Antilog}(1.44) = 27.57$$

$$H.M = \frac{\sum f}{\sum \frac{f}{x}} = \frac{219}{8.62} = 25.40$$

$$A.M = \frac{\sum f \cdot x}{N} = \frac{6425.5}{219} = 29.34$$

Page ②

# Answer of Question (2)

Date: / / 20

## Part (A)

No of child per family	No of family	cum. freq
1	4	4
2	13	17
3	9	26
4	4	30
5	1	31
	<hr/>	
	31	

$$N = \frac{31}{2} = 15.5$$

$$\text{Median} = \frac{2+3}{2} = \frac{5}{2} = 2.5$$

$$\text{Mode} = 2$$

Page (3)

Answer of Question No (2)

Date: 1/20

Part (B)

$$\text{Median} = l + \left( \frac{N/2 - c.f}{f} \right) x_i$$

$$29.5 + \left( \frac{109.5 - 106}{85} \right) 10$$

$$29.5 + \frac{3.5}{85} \times 10 = 29.91$$

$$\text{Mode} = l + \left( \frac{f_1 - f_0}{2f_1 - f_0 - f_2} \right) x_i$$

$$= 29.5 + \left( \frac{85 - 73}{170 - 73 - 28} \right) 10$$

$$= 29.5 + 1.73$$

$$= 31.23$$

Page (4)

Answers of Question No (3)

Date: 1/20

Part (A)

$$Q_1 = \text{Size of } \left(\frac{n+1}{4}\right)^{\text{th}} \text{ item}$$

$$= \left(\frac{5+1}{4}\right)^{\text{th}} \text{ item} = (2.25)^{\text{th}} \approx 2^{\text{nd}}$$

$$\boxed{Q_1 = 2}$$

$$Q_2 = \text{Size of } \left(\frac{2n+1}{4}\right)^{\text{th}} \text{ item}$$

$$= \left(\frac{10+1}{4}\right)$$

$$\boxed{Q_2 = 4}$$

$$Q_3 = \text{Size of } \left(\frac{3n+1}{4}\right)^{\text{th}} \text{ item}$$

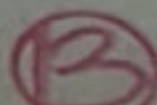
$$= \left(\frac{15+1}{4}\right)$$

$$Q_3 = 4.7 = 5$$

$$\boxed{Q_3 = 5}$$

Page (5)

Signature

 Eber Paper Products

Date: 1 / 20

Semi-Quartile-Range

$$Q_3 - Q_1 = 5 - 2 = \boxed{3}$$

Semi-Inter-Quartile-Range

$$\frac{Q_3 - Q_1}{2} = \frac{5 - 2}{2}$$

$$= \frac{3}{2}$$

$$= \boxed{1.5}$$

Page 6

# Answer of Question ③ Part (B)

Date: / / 20

No of childrens per family	No of families	$x - \bar{x}$	$(x - \bar{x})^2$	$F \cdot x$	$F(x - \bar{x})^2$
1	4	77	5929	4	23716
2	13	76	5776	26	75088
3	9	75	5625	27	50625
4	4	74	5476	16	21904
5	1	73	5329	5	5329
				78	176662

$$\text{variance} = \frac{\sum f(x - \bar{x})^2}{\sum f - 1} = \frac{176662}{30} = 5888.7$$

$$S.D = \sqrt{5888.7} = 76.73$$

$$C.V = \frac{S.D}{\bar{x}} \times 100 = \frac{76.73}{78} = 98.37$$

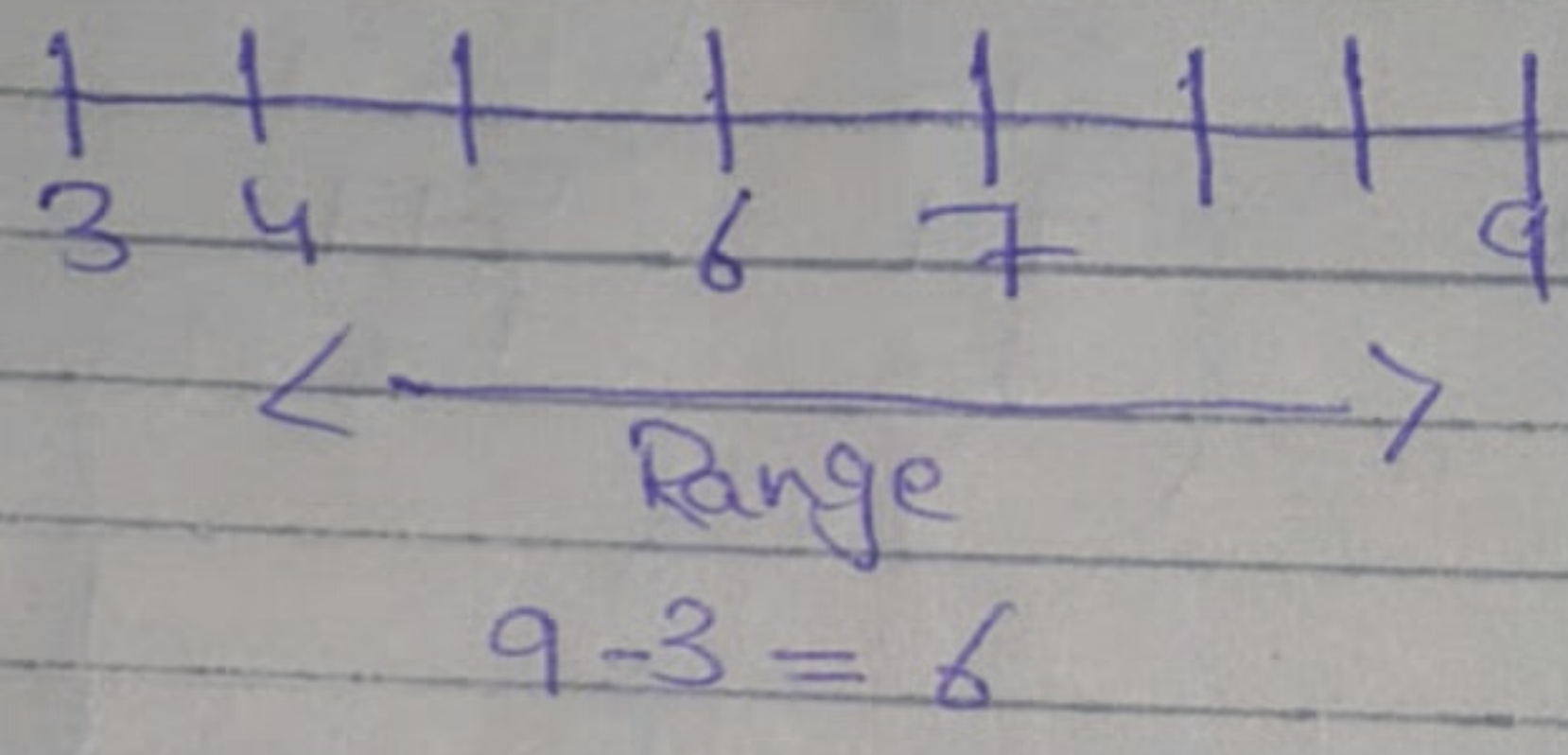
Page ①



- ① Range
- ② Quartile Range
- ③ Semi inter quartile Range
- ④ Variance
- ⑤ Standard Deviation
- ⑥ Coefficient of Variation

### Range

The range of a set of data is the difference b/w the largest and smallest values is called Range.



### Quartile Range

In descriptive statistics, the interquartile range, also called the mid-spread, or a middle 50% or H-spread is a measure of statistical dispersion, being equal to the difference b/w 75th and 25th percentiles or b/w upper and

lower quartile,  $IQR = Q_3 - Q_1$ .

### Variance

In probability theory and statistics, variance is the expectation of the squared deviation of a random variable from its mean. Informally, it measures how far a set of numbers are spread out from their average value.

