

$$MD_{AM} = \frac{\sum_{i=1}^n f_i |x_i - AM|}{\sum_{i=1}^n f_i}$$

$$MD_{Mo} = \frac{\sum_{i=1}^n f_i |x_i - Mo|}{\sum_{i=1}^n f_i}$$

$$MD_{Me} = \frac{\sum_{i=1}^n f_i |x_i - Me|}{\sum_{i=1}^n f_i}$$

Co-efficient of Mean Deviation is

$$CMD = \frac{MD_{Base}}{Base} \times 100\% ; Base = AM, Mo, Me$$

$$\sigma = \sqrt{\frac{\sum_{i=1}^n f_i x_i^2}{\sum_{i=1}^n f_i} - \left( \frac{\sum_{i=1}^n f_i x_i}{\sum_{i=1}^n f_i} \right)^2}$$

Co-efficient of Standard Deviation is

$$CSD = \frac{SD}{AM} \times 100\%$$

Interquartile Range is

$$IQR = Q_3 - Q_1$$

Co-efficient of Interquartile Range

$$CIQR = \frac{Q_3 - Q_1}{Q_3 + Q_1} \times 100\%$$

Original Class	Class Marks (x)	Frequency (f)	f*ABS(x - AM)	f*ABS(x - Mode)	f*ABS(x - Median)	f*x	f*x^2	u = (x - 63.5)/4	f*u	f*u^2	z = (x - AM)/SD
53.5-57.5	55.5	6	53.28	69.24	57.84	333	18481.5	-2	-12	24	-1.770864493
57.5-61.5	59.5	9	43.92	67.86	50.76	535.5	31862.25	-1	-9	9	-0.973177784
61.5-65.5	63.5	11	9.68	38.94	18.04	698.5	44354.75	0	0	0	-0.1754910759
65.5-69.5	67.5	16	49.92	7.36	37.76	1080	72900	1	16	16	0.6221956327
69.5-73.5	71.5	8	56.96	35.68	50.88	572	40898	2	16	32	1.419882341
Sum		50	213.76	219.08	215.28	3219	208496.5		11	81	
Arithmetic mean = 64.38 Mode = 67.04 Median = 65.14 MD (AM) = 4.2752 MD (Mode) = 4.3816 MD (Median) = 4.3056 Co-efficient of MD (AM) = 6.64% Co-efficient of MD (Mode) = 6.54% Co-efficient of MD (Median) = 6.61% SD (Direct) = 5.014538862 SD (Code) = 5.014538862 a = 63.5, h = 4 Co-efficient of SD = 7.79%											

Class Boundaries	x	f	f(x-AM)	f(x-Mo)	f(x-Me)	f <sub>1</sub> x <sub>1</sub>	f <sub>2</sub> x <sub>2</sub>
53.5-57.5	55.5	6	53.28	69.24	57.84	333	18481.5
57.5-61.5	59.5	9	43.92	67.86	50.76	535.5	31862.25
61.5-65.5	63.5	11	9.68	38.94	18.04	698.5	44354.75
65.5-69.5	67.5	16	49.92	7.36	37.76	1080	72900
69.5-73.5	71.5	8	56.96	35.68	50.88	572	40898
		$\Sigma f = 50$	$\Sigma f(x-AM) = 213.76$	$\Sigma f(x-Mo) = 219.08$	$\Sigma f(x-Me) = 215.28$	3219	208496.5

$$IQR = Q_3 - Q_1 = 65.14 - 60.58 = 4.56$$

$$IQR = \frac{Q_3 - Q_1}{Q_3 + Q_1} \times 100\%$$

$$z = \frac{x - AM}{SD}$$

$$z = \frac{x - \bar{x}}{s}$$

$$AM = 64.38, Mo = 67.04, Me = 65.14$$

$$MD_{AM} = \frac{213.76}{50} = 4.2752$$

$$MD_{Mode} = \frac{219.08}{50} = 4.3816$$

$$MD_{Median} = \frac{215.28}{50} = 4.3056$$

$$CMD_{AM} = \frac{MD_{AM}}{AM} \times 100\% = \frac{4.2752}{64.38} \times 100\% = 6.64\%$$

$$CMD_{Mo} = \frac{MD_{Mo}}{Mo} \times 100\% = \frac{4.3816}{67.04} \times 100\% = 6.535\%$$

$$CMD_{Me} = \frac{MD_{Me}}{Me} \times 100\% = \frac{4.3056}{65.14} \times 100\% = 6.61\%$$

$$SD = \sqrt{\frac{\Sigma f_1 x_1^2}{\Sigma f_1} - \left(\frac{\Sigma f_1 x_1}{\Sigma f_1}\right)^2} = \sqrt{\frac{208496.5}{50} - \left(\frac{3219}{50}\right)^2} = 5.0145$$

$$CSD = \frac{SD}{AM} \times 100\% = \frac{5.0145}{64.38} \times 100\% = 7.79\%$$