

TUTORIAL 4 : DISPERSION

② Mean Deviation =  $\frac{\sum |x - \bar{x}|}{n}$ , Variance =  $\frac{\sum (x - \bar{x})^2}{n}$ , Standard Dev =  $\sqrt{\text{variance}}$

x	x - $\bar{x}$	x - $\bar{x}$	(x - $\bar{x}$ ) <sup>2</sup>
18	6.88	6.88	47.27
11	-0.13	0.13	0.02
14	2.88	2.88	8.27
8	-3.13	3.13	9.77
11	-0.13	0.13	0.02
11	-0.13	0.13	0.02
8	-3.13	3.13	9.77
8	-3.13	3.13	9.77
		19.50	84.88

Mean,  $\bar{x} = \frac{\sum x}{n} = \frac{89}{8} = 11.125$

Mean deviation =  $\frac{19.50}{8} = 2.4375$

Variance =  $\frac{84.88}{8} = 10.61$

Standard deviation =  $\sqrt{10.61} = 3.257$

③ Mean Deviation =  $\frac{\sum f|x - \bar{x}|}{\sum f}$ , Variance =  $\frac{\sum fx^2}{\sum f} - \text{Mean}^2$

x	f	fx	fx <sup>2</sup>	x - $\bar{x}$	f x - $\bar{x}$
12	5	60	720	3.19	15.94
13	10	130	1690	2.19	21.88
14	20	280	3920	1.19	23.75
15	10	150	2250	0.19	1.88
16	15	240	3840	0.81	12.19
17	10	170	2890	1.81	18.13
18	5	90	1620	2.81	14.06
19	5	95	1805	3.81	19.06
		80	1215	16	126.88

Mean =  $\frac{\sum fx}{\sum f} = \frac{1215}{80} = 15.19$

Mean deviation =  $\frac{126.88}{80} = 1.59$

Variance =  $\frac{18735}{80} - 15.19^2$

= 3.45

Standard dev = 1.858

④ Mean =  $\frac{5595}{170} = 32.91$

x	f	fx	fx <sup>2</sup>	x - $\bar{x}$	f x - $\bar{x}$
17	9	153	2601	15.91	142.21
22	16	352	7744	10.91	174.59
27	27	729	19683	5.91	159.62
32	44	1408	45056	0.91	40.12
37	42	1554	57498	4.09	171.71
42	23	966	40572	9.09	209.03
47	7	329	15463	14.09	98.62
52	2	104	5408	19.09	38.18
		170	5595	80	1035.06

Mean deviation =  $\frac{1035.06}{170} = 6.089$

Variance =  $\frac{194025}{170} - 32.91^2$   
= 58.255

Standard deviation = 7.63

- MCCQ = 1) C                      5) D                      9) B  
 2) B                              6) C  
 3) A                              7) B  
 4) A                              8) B