SECTION B · Numerical calculations.

Q 6

Lossed In Time	Freq (No of Students)	M_i	f_iM_i	M_i^2	$f_iM_i^2$
< 2hrs	6	1	6	1	6
≥2 - <4	14	3	42	9	126
≥4 - <6	34	5	170	25	850
≥6 - <8	26	7	182	49	1274
≥8 - <10	10	9	90	81	810
≥10 - <12	8	11	88	121	968
	98		578		4034

$$\text{mean}(\bar{x}) = \frac{\Sigma f_i M_i}{\Sigma f_i} = \frac{578}{98} = 5.897 = 5.9$$

standard deviation:

$n = \Sigma f_i$

$$s^2 = \frac{\Sigma f_i M_i^2 - n(\bar{x})^2}{n-1} = \frac{4034 - 98(5.9)^2}{97}$$

$$s^2 = \frac{4034 - 3411.38}{97}$$

$$s^2 = \frac{622.62}{97} = 6.42$$

$$s = \sqrt{6.42} = 2.53.$$

Q7.

class	freq	M_i	f_iM_i	M_i^2	$f_iM_i^2$
0-4	2	2	4	4	8
4-8	6	6	36	36	216
8-12	12	10	120	100	1200
12-16	6	14	84	196	1176
16-20	2	18	36	324	648
	28		280		3248

$$\text{mean}(\bar{x}) = \frac{280}{28} = 10.$$

$$s^2 = \frac{\Sigma f_i M_i^2 - n(\bar{x})^2}{n-1} = \frac{3248 - 28(10)^2}{27}$$

$$s^2 = \frac{448}{27} = 16.59$$

$$s = \sqrt{16.59} = 4.07$$

Q8.

compile errors	No. Students	M_i	f_iM_i	M_i^2	$f_iM_i^2$
0-<2	8	1	8	1	8
2-<4	5	3	15	9	45
4<6	4	5	20	25	100
6-<8	2	7	14	49	98
8-<10	1	9	9	81	81
	20		66		332

$$\bar{x} = \frac{66}{20} = 3.3. \qquad s^2 = \frac{332 - 20(3.3)^2}{19} = \frac{114.2}{19}$$

$$s^2 = 6.01$$

$$s = \sqrt{6.01} = 2.45$$