Assignment #.02

Submitted By : Sawera Yousaf

Roll Number : 19P-0007

Section : Bs - CS-4 A

Question NO: 1

(a) sample mean $= \dfrac{57 + 61 + 57 + 57 + 58 + 61 + 54 + 68 + \cdots + 47}{44}$

$= 54.63.$

Sample standard deviation

Value	frequency	Value	frequency
42	1	50	2
43	1	51	4
46	2	52	2
47	2	54	5
48	1	55	3
49	2	56	4
50	1	58	1
61	3	64	2
62	1	65	1
		68	1
		69	1

$$\alpha^2 = \frac{\Sigma(x_i - \bar{x})^2}{n-1}$$

$$= \frac{(57 - 54.6364)^2 + \cdots + (43 - 54.6364)^2}{44 - 1}$$

$$= \frac{1692.1818}{43}$$

$$\alpha = \sqrt{39.353}$$

$$= 6.27$$

(b)

Interval	frequency
40 - 43	2
44 - 47	4
48 - 51	9
52 - 55	11
56 - 59	8
60 - 63	5
64 - 67	3
68 - 71	2

Scanned with CamScanner

Histogram with x-axis labels: 40-43, 44-47, 48-51, 52-55, 56-59, 60-63, 64-67, 68-71. Y-axis marked at 2, 4, 6, 7, 8, 10, 12.
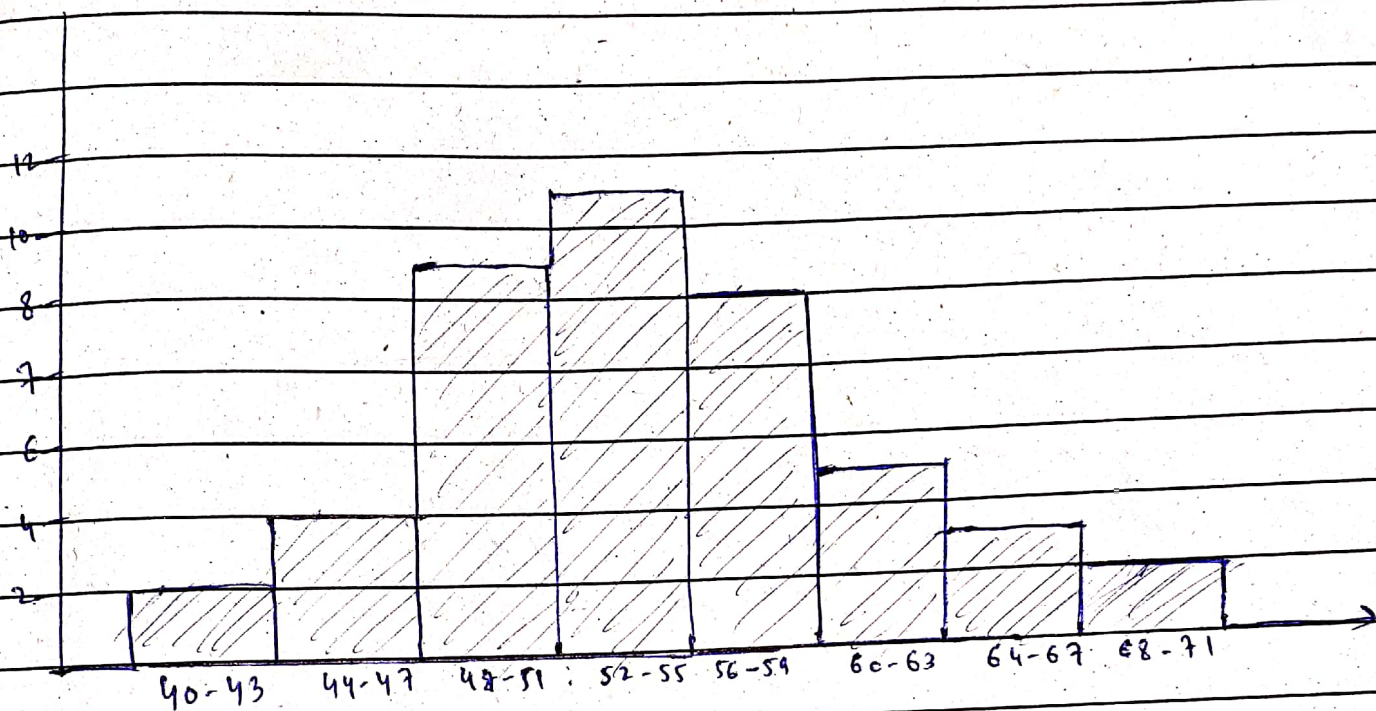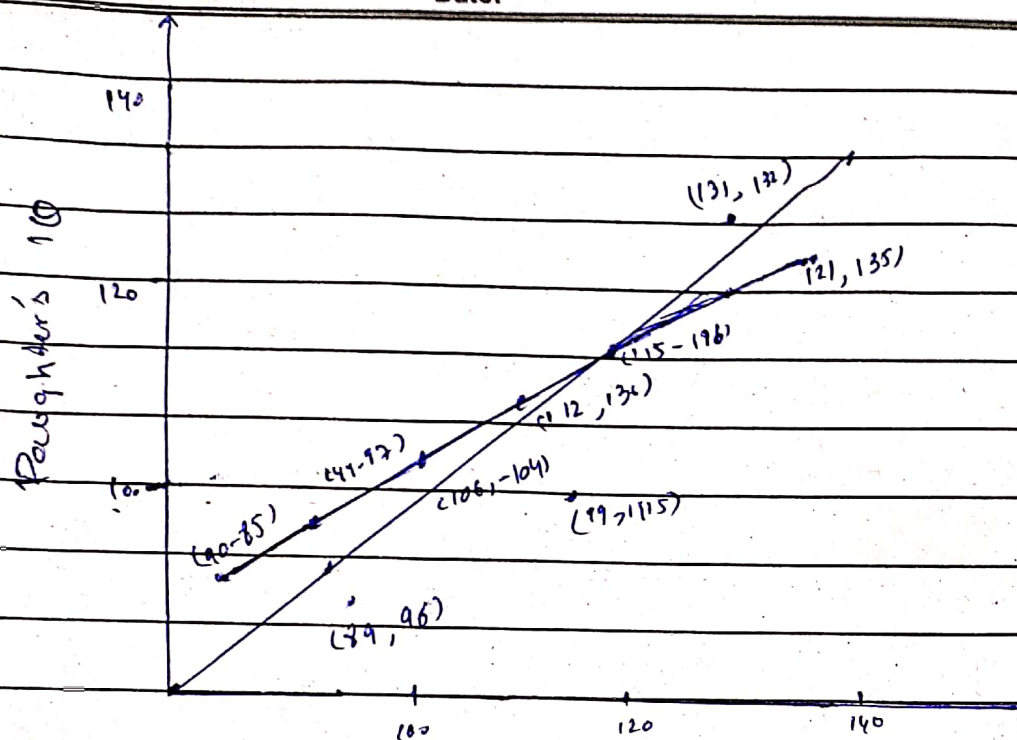
(c) Yes, data appear to be approximately normal because most of the points lies near mean and follows a bell shaped graph.

(d) 40-67, 44-71

(e) $\dfrac{42}{44} \times 100 = 95.4\%$

Question No. 2

(a)   Scatter Diagram.

Mother's 10

(b) ≈ 0.80   (approximately)

(c)

$x - m_x$	$y - m_y$	$(x - m_x)^2$	$(y - m_y)^2$	$(x - m_x)(y - m_y)$
-26.2	-17.3	686.4440	299.290	453.26
-15.2	-18.3	231.040	334.890	278.16
-17.2	-15.3	235.84	234.89	9.6
-7.2	-1.3	51.84	1.69	31.54
3.8	-8.3	14.44	68.89	8.56
0.8	10.7	0.640	114.49	67.76
8.8	7.7	77.44	59.29	6.1
12.8	4.7	163.84	22.09	339.460
15.8	23.7	249.640	561.69	326.866
23.8	13.7	566.440	187.65	
$m_x = 111.2$	$m_y = 107.30$	Sum = 2337.6	Sum = 1889.1	Sum = 1809.9

$\Sigma(x - m_x)^2 = 2337.6$

$\Sigma(y - m_y)^2 = 1884.1$

$\Sigma(x - m_x)(y - m_y) = 1809.4$

$$r = \frac{1809.4}{\sqrt{2337.6 \times 1884.1}}$$

$$r = 0.862$$

(d)

Mother and Daughter's IQ have strong positive correlation so higher the mother's IQ, higher will be the daughter's IQ.

Question No: 3

$$\text{No. of way} = \frac{7!}{3! \, 4!} = 35$$

3 letters $= 26 \times 26 \times 26$

4 digits $= 10 \times 10 \times 10 \times 10$

Total no. of plates $= 35 \times 10^4 \times 26^3$

$= 61516 \times 10^5$