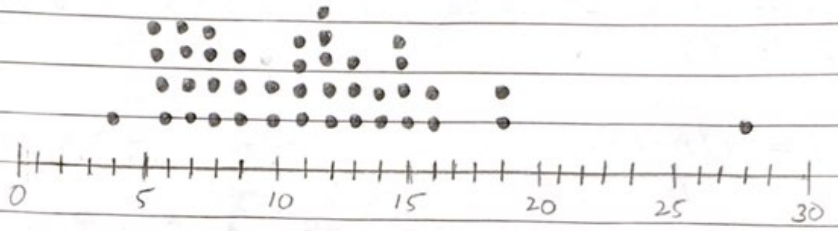
ASSIGNMENT # 01

Date: _____

BASIL ALI KHAN
20K - 0477

Question # 01 :

a) a dot plot for the data



number of storms each year

b) Stem and leaf plot for the data

Before arranging

Stem	Leaf
0	7, 6, 9, 8, 8, 9, 8, 7, 4, 6
1	2, 2, 0, 2, 5, 9, 5, 4, 1, 1, 6; 1, 6, 2, 3, 4, 3, 2, 5, 5, 9, 1, 3, 0
2	8

After arranging

Stem	Leaf
0	4, 6, 6, 6, 7, 7, 7, 7, 8, 8, 8, 8, 9, 9, 9
1	0, 0, 1, 1, 1, 1, 2, 2, 2, 2, 2, 3, 3, 3, 4, 4, 5, 5, 5, 5, 6, 6, 9, 9
2	8

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Question # 02

(a)

⇒ arrange from smallest to Largest

31, 38, 39, 39, 42, 42, 45, 47, 48, 48, 48, 52, 52, 53, 54, 55, 57, 59, 60, 61, 64, 64, 66, 66, 67, 68, 68, 69, 71, 71, 74, 75, 77, 79, 79, 79

$\therefore Q_i = \frac{i(n+1)}{4}$

$Q_1 = \frac{1(36+1)}{4} = 9.25 = 9^{th} + 0.25(10^{th} - 9^{th})$

$= 48 + 0.25(48 - 48)$

$= \boxed{48}$

$Q_2 = \frac{2(36+1)}{4} = 18.5 = 18^{th} + 0.5(19^{th} - 18^{th})$

$= 59 + 0.5(60 - 59)$

$= \boxed{59.5}$

$Q_3 = \frac{3(36+1)}{4} = 27.75 = 27^{th} + 0.75(28^{th} - 27^{th})$

$= 68 + 0.75(69 - 68)$

$= \boxed{68.75}$

(b)

$IQR = Q_3 - Q_1$

$= 68.75 - 48$

$= \boxed{20.75}$

50% of ages vary by about 20.5 years

(c)

The five number summary consist of

Minimum: 31 Maximum: 79

Q_1: 48 Q_3: 68.75

Q_2: 59.5

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25% of millionaries have age of atmost 48 years.
50% of millionaires have age of atmost 595 years
75% of millionaires have age of atmost 68.5 years.

(d)

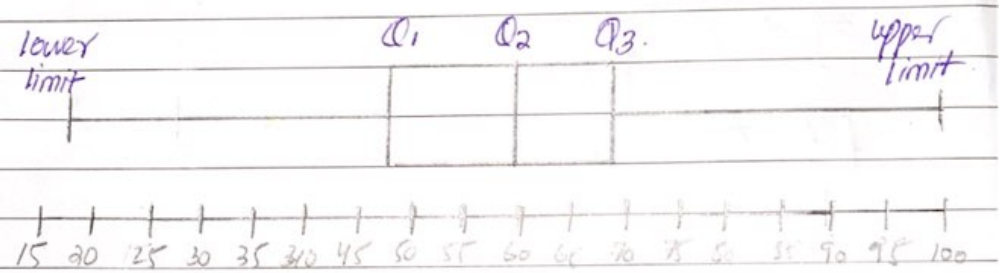
Upper limits = $Q_3 + 1.5(IQR)$.
$= 68.5 + 1.5(20.5)$
$= \boxed{99.875}$.

Lower Limit = $Q_1 - 1.5(IQR)$.
$= 48 - 1.5(20.5)$
$= \boxed{16.875}$

(e)

There is [no outlier] because all data values in sample are between 16.875 and 99.875.

(f)



[right skewed].

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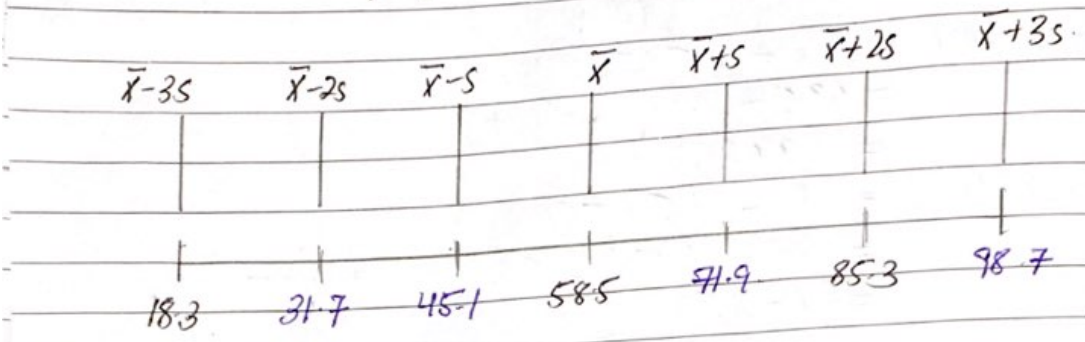
Question # 03.

a) Complete a graph.



$\bar{X} \Rightarrow 58.5$

$S \Rightarrow 13.4$

$\bar{X}-2S = 58.5 - 2(13.4)$

$= \boxed{31.7}$

$\bar{X}-S = 58.5 - 13.4$

$= \boxed{45.1}$

$\bar{X}+S = 58.5 + 13.4$

$= \boxed{71.9}$

$\bar{X}+3S = 58.5 + 3(13.4)$

$= \boxed{98.7}$

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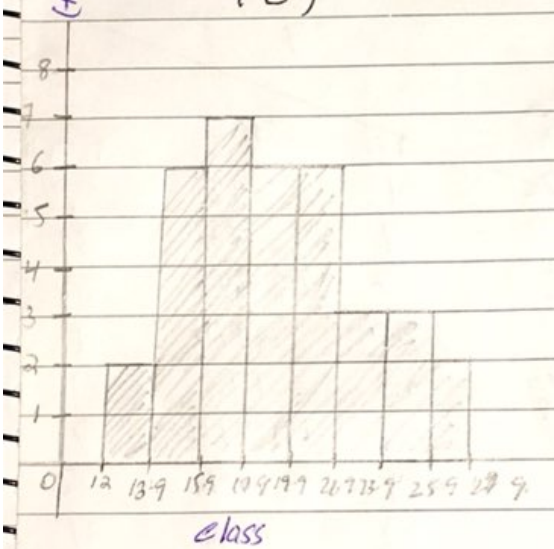
Question # 04.

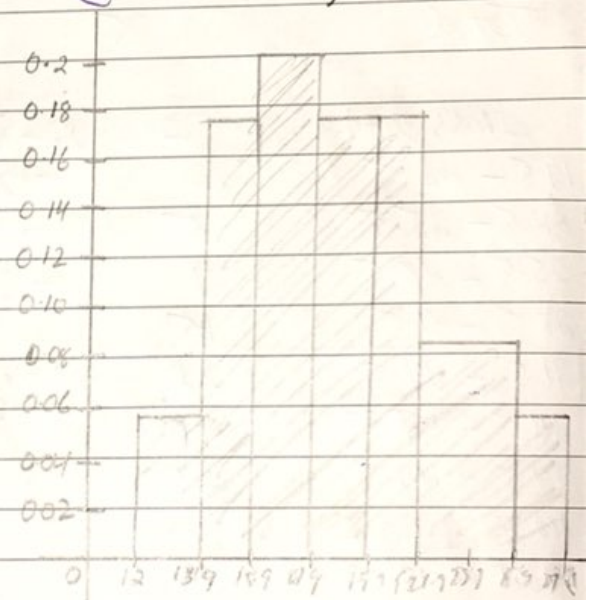
FUEL TANK CAPACITY: (a & b).

class	f	x_i	$f_i x_i$	$x_i - \bar{x}$	$(x_i - \bar{x})^2$	c	R_f
12 less than 14	2	13.95	25.9	-7.0	49	2	0.057
14 less than 16	6	14.95	89.7	-5.0	25	8	0.171
16 less than 18	7	16.95	118.65	-3.0	9	15	0.2
18 less than 20	6	18.95	113.7	-1.0	1	21	0.171
20 less than 22	6	20.95	125.7	1.0	1	27	0.171
22 less than 24	3	22.95	68.85	3.0	9	30	0.085
24 less than 26	3	24.95	74.85	5.0	25	33	0.085
26 less than 28	2	26.95	53.9	7.0	49	35	0.0571
Total =	35	1995	671.25	1.0	168.		1

(c)



(d).



Mean $= \frac{\Sigma f_i x_i}{\Sigma f_i}$

$= \frac{671.25}{35}$

$= \boxed{19.179}$

Median $= L + h_i \left(\frac{n}{2} - c\right) / f$

$= 17.95 + 2/6\left(\frac{35}{2} - 15\right)$

$= \boxed{18.7833}$

class

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

$= \frac{168}{34}$

$= \boxed{4.9411}$

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Cheese Consumption:

(a & b)

Class	Frequency	Relative frequency
20-22	2	0.057
23-25	3	0.086
26-28	4	0.114
29-31	7	0.2
32-34	6	0.171
35-37	5	0.143
38-40	3	0.086
41-43	3	0.086
44-46	2	0.057
Total	35	1

Class Boundary	c	$x_i - \bar{x}$	x_i	$f_i x_i$	$(x_i - \bar{x})^2$
19.5 - 22.5	2	-12	21	42	144
22.5 - 25.5	3	-9	24	72	81
25.5 - 28.5	9	-6	27	108	36
28.5 - 31.5	16	-3	30	210	9
31.5 - 34.5	22	0	33	198	0
34.5 - 37.5	27	3	36	180	9
37.5 - 40.5	30	6	39	117	36
40.5 - 43.5	33	9	42	126	81
43.5 - 46.5	35	12	45	90	144
				$\Sigma f_i x_i =$ 1143	540

$$\text{Mean} = \frac{\Sigma f_i x_i}{\Sigma f_i} = \frac{1143}{35} = \boxed{32.65}$$

$$\text{Median} = l + \frac{n}{f}\left(\frac{n}{2} - c\right) = 31.5 + \frac{3}{6}\left(\frac{35}{2} - 16\right) = \boxed{30.75}$$

$$\text{Variance} = \frac{\Sigma (x_i - \bar{x})^2}{n-1} = \frac{540}{34} = \boxed{15.88}$$

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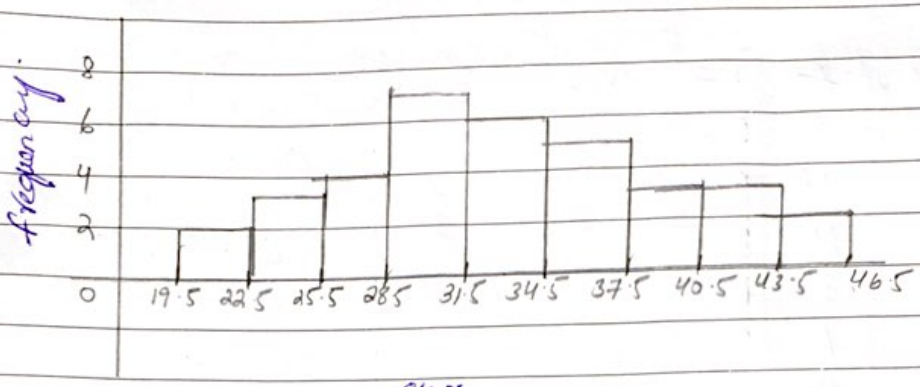
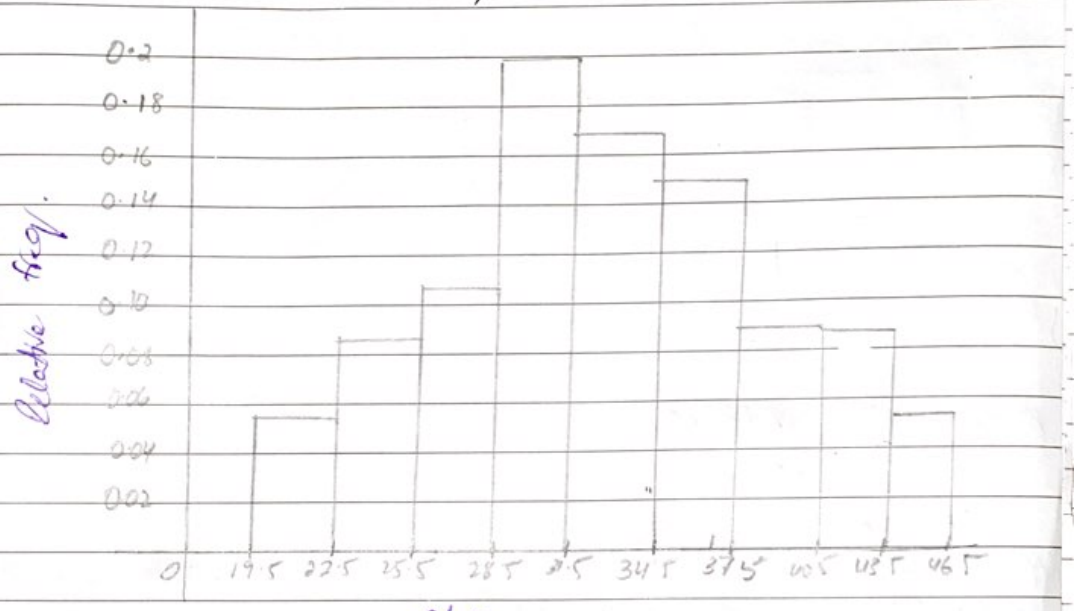
(c)



(d)



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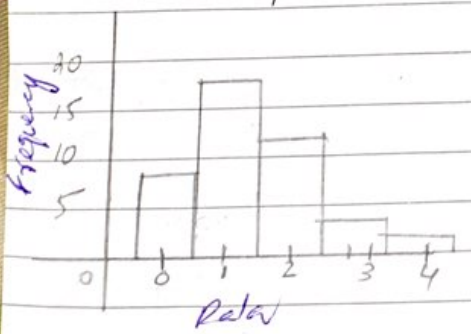
Number of Siblings.

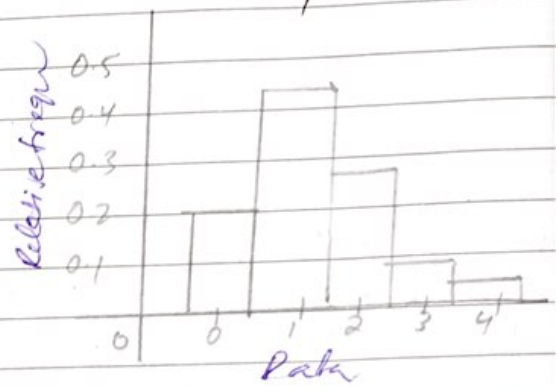
(a & b.)

Data	f	RF	$x_i - \bar{x}$	$(x_i - \bar{x})^2$
0	8	0.2	2	4
1	17	0.425	1	1
2	11	0.275	0	0
3	3	0075	1	1
4	1	0025	1	1
Total =	40	1		7

(a)



(b)



$$\text{Mean} = \frac{0+1+2+3+4}{5} = \boxed{2}$$

Median $\Rightarrow$ 0 1 (2) 3 4

$\left(\frac{n+1}{2}\right)^{th} \Rightarrow \left(\frac{5+1}{2}\right) \Rightarrow 3^{rd}$

$$\text{Variance} = \frac{\Sigma (x_i - \bar{x})^2}{n-1} = \frac{4}{5-1} = \boxed{1.75}$$