

Q 1
 $428 - 363 = 65$
 size of class interval should = $65/7 = 9.28 \approx 10$
 classes.

Class Interval	Entries	Frequency	(CMF)	Midpoint
360 - 369	369, 363,	2	2	364.5
370 - 379	371, 377, 372	3	5	374.5
380 - 389	387, 389, 382, 381 386.	5	10	384.5
390 - 399	393, 394, 392 391, 399, 396, 390	7	17	394.5
400 - 409	409, 408, 401, 405 400,	5	22	404.5
410 - 419	410, 411, 415, 419.	4	26	414.5
420 - 429	423, 428, 422,	3	29	424.5
430 - 439	431,	1	30	434.5
		<hr/> 30		<hr/> 3196

xf
729.
1123.5
1922.5.
2761.5.
2022.5
1658.
1273.5.
434.5
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11925

For Mean $\frac{\sum xf}{\sum f}$

$$= \frac{11925}{30} = 397.5.$$

For Median:-

value of $(\frac{n+1}{2})^{\text{th}}$ observation.

$$= \left(\frac{30}{2}\right) = 15^{\text{th}} \quad \text{so } 390 - 399.$$

$$= l + h/f \left(\frac{n}{2} - c\right)$$

$$= 389.5 + \frac{10}{7} \left(\frac{15}{2} - 10\right) = 386.$$

$$\begin{aligned} \text{Quartiles } & \frac{n+1}{4} \\ & \frac{30+1}{4} \\ & = 8.5 \end{aligned}$$

Pg 3

$$399.5 - 409.5$$

$$Q_1 = l + h \cdot \frac{1}{4} (n \cdot \frac{1}{4} - c)$$

$$= 399.5 + \frac{10}{5} \left(\frac{8.5}{4} - 394.5 \right)$$

$$= 385.2$$

Q2

Pg 4

x	$x - \bar{x}$	$(x - \bar{x})^2$
3	-1	1
6	2	4
2	-2	4
1	-3	9
7	3	9
5	1	1
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24		28

$$\bar{x} = \frac{\sum x}{n} = \frac{24}{6} = 4$$

$$S_x = \sqrt{\frac{28}{6}}$$

$$= 2.16$$

NOW $y = 2x + 5$

y	$y - \bar{y}$	$(y - \bar{y})^2$
11	-2	4
17	4	16
9	-4	16
7	-6	36
19	6	36
15	2	4
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78		112

$$\bar{y} = \frac{\sum y}{n} = \frac{78}{6} = 13$$

$$S_y = \sqrt{\frac{112}{6}} = 4.32$$

Q3:-

class	f	M.P(x)	fM	\bar{x}	M-x	(M-x) ²
64-84	15	74	1110	123.1	-49.1	2410.8
85-104	18	94.5	1701	123.1	1577.9	2489768.4
105-124	27	114.5	3091.5	123.1	2968.4	8811398.5
125-144	10	134.5	1345	123.1	1221.9	149303
145-164	6	154.5	927	123.1	803.9	64625.21
165-184	5	174.5	872.5	123.1	749.4	561600.3
185-204	13	194.5	2528.5	123.1	2405.4	57859.4
	94		11575.5			

$$\bar{x} = \frac{\sum fM}{f} = \frac{11575.5}{94} = 123.1$$

3616.2
 44802
 237905
 149303
 387751.2
 2808
 752 177.2

 90142.6

$$S = \sqrt{\frac{\sum f(m-x)^2}{n-1}}$$

$$= \sqrt{\frac{9014.26}{94-1}}$$

$$= 31.1$$

Q4

Pg 6

Sol:-

The sample space is represented by following 36 outcomes.

$$S = \{(1,1) (1,2) (1,3) (1,4) (1,5) (1,6) \\ (2,1) (2,2) (2,3) (2,4) (2,5) (2,6) \\ (3,1) (3,2) (3,3) (3,4) (3,5) (3,6) \\ (4,1) (4,2) (4,3) (4,4) (4,5) (4,6) \\ (5,1) (5,2) (5,3) (5,4) (5,5) (5,6) \\ (6,1) (6,2) (6,3) (6,4) (6,5) (6,6)\}$$

As the dice are fair, therefore each of these 36 outcomes is equally likely & probability of $\frac{1}{36}$ is attached with each outcome.

i) Let A represent event that double six occurs

$$\text{Then } A = \{(6,6)\} \text{ thus } P(A) = \frac{1}{36}$$

ii) Let B denote the event that a sum of 8 or more dots occurs

$$B = \{(6,2) (5,3) (4,4) (3,5) (2,6) (6,3) (5,4) (4,5) \\ (3,6) (6,4) (5,5) (4,6) (6,5) (5,6) (6,6)\}$$

$$P(B) = \frac{15}{36} = \frac{5}{12}$$