

MT 06-Class X

1

(c)

2

(c)

3

(c)

4

(b)

5

(d)

6

(b)

7

(d)

8

(b)

9

(a)

10

(b)

11

Favourable outcomes = -1, 0, 1

Possible outcomes = -3, -2, -1, 0, 1, 2, 3

$P(x^2 < 4) = \frac{3}{7}$

12

Ans 12.

	(Height in cm)	Cumulative frequency	f	
100-120	< 120	12	12	$\text{Median} = \frac{l + \frac{N}{2} - c_{fp}}{f_m} \times h$ $\frac{N}{2} = \frac{50}{2} = 25$ Median class is 120-140.
0-140	< 140	26	14	
10-160	< 160	34	8	
0-180	< 180	40	6	
0-200	< 200	50	10	
50				
$c_{fp} = 12, l = 120$ $f_m = 14, h = 20$ $\text{Median} = 120 + \frac{25 - 12}{14} \times 20$ $= 120 + \frac{13 \times 20}{14}$ $= 120 + \frac{130}{7}$ $= 120 + 18.57$ $= 138.57 \text{ Ans.}$				18.57 7 130 -7 60 56 40 35 50

13

$$\text{Mode} = l + \frac{f_1 - f_0}{2f_1 - f_0 - f_2} \times h \Rightarrow 75 = 65 + \frac{x-6}{2x-6-8} \times 15$$

$$\Rightarrow 10 = \frac{x-6}{2x-14} \times 15 \Rightarrow 2 = \frac{x-6}{2x-14} \times 3 \Rightarrow 4x-28 = 3x-18$$

$$\Rightarrow 4x-3x = 28-18 \Rightarrow x=10$$

14

Ans 4i) Number of Favourable outcomes = 15
Possible outcomes = 36

$$P(\text{Sum of numbers} < 7) = \frac{15}{36} = \frac{5}{12}$$

ii $P(\text{Product of numbers} < 18) = \frac{26}{36} = \frac{13}{18}$

OR

(a) 9/49

(b) 1/7

15

Ans 15:

f_i	x_i	$f_i x_i$	$f_i d_i$
2	15	30	
3	17	51	
4	19	76	
5	$20+p \rightarrow 5(20+p)$		
6	23	138	
20			

By Assumed mean method:

$$\bar{x} = \frac{\sum f_i d_i}{\sum f_i}$$

$$\Rightarrow 20 = \frac{295 + 100 + 5p}{20}$$

$$\Rightarrow \frac{400 - 395}{5} = p$$

$$\Rightarrow p = \frac{5}{5} = 1$$

$$\Rightarrow p = 1$$

ATQ; $10 + x + 25 + 30 + y + 10 = 100$ ($N=100$)

$$\Rightarrow x + y = 100 - (75)$$

$$\boxed{x + y = 25} \rightarrow \text{①}$$

CI	f	cf
0-10	10	10
10-20	x	10+x
20-30	25	35+x
30-40	30	65+x
40-50	y	65+x+y
50-60	10	75+x+y
	<u>100</u>	

$$\frac{N}{2} = 50$$

$$cf_p = 35 + x$$

$$fm = 30$$

$$\text{median} = \frac{l + \frac{N}{2} - cf_p}{f_m} \times h$$

$$22 = 30 + 50 - \frac{(35+x) \times 10}{30}$$

$$\Rightarrow 2 = \frac{50 - 35 - x}{3}$$

$$\Rightarrow 6 = 15 - x$$

$$\Rightarrow \boxed{x = 9}$$

$$y = 25 - 9$$

$$\boxed{y = 16}$$

Ans

$$17i) P(\text{red card}) = \frac{26}{49}$$

$$P(\text{black jack}) = \frac{1}{49}$$

$$P(\text{red king}) = \frac{2}{49}$$

$$P(10 \text{ of hearts}) = \frac{1}{49}$$

18 (i) 5/36

(ii) 0

(iii)(a) 1

OR

(b) 7/12

19

Ans 19: Median class = 30-45

$$ii) P(\text{calling out an even number}) = \frac{37}{48}$$

iii	cI	f	cf
	0-15	8	8
	15-30	9	17
	<u>30-45</u>	10	27
	45-60	12	39
	60-75	9	48
		<u>48</u>	

$$N = 48$$

$$cfp = 17$$

$$\frac{N}{2} = 24$$

$$l = 30, h = 15$$

$$fm = 10$$

$$\text{Median} = 30 + \frac{24 - 17}{10} \times 15$$

$$= 30 + \frac{7}{2} \times 1.5$$

$$= 30 + 10.5$$

$$\text{Median} = 40.5$$

iv

$$\text{Mode} = l + \frac{f_1 - f_0}{2f_1 - f_0 - f_2} \times h$$

$$= 45 + \frac{12 - 10}{2(12) - 10 - 9} \times 15$$

$$= 45 + \frac{2}{8} \times 15$$

$$= 45 + 6$$

$$\boxed{\text{Mode} = 51}$$