Now

$$= MD = \frac{\sum f_i |x_i - \bar{x}|}{\sum f_i} = \frac{100}{30} = 3.33$$

Assignment

Class Interval	24-28	29-33	34-38	39-43	44-48	49-53
Freq.	18	7	6	15	23	4

Using the above data Calculate

1 (i) The mean using Coding method

(ii) The median

(iii) The mode

iv First and Third Quartiles

v Interquartile Range and Semi Interquartile range

vi Third and Eight Decile (3rd and 8th deciles)

vii 60th and 90th Percentile

viii Mean Deviation

xi Variance and Standard deviation

NEXT TOPIC → Variance and

Assignment
DONE

Class Interval	fi	x	fx	d (x-A)	fd	u	fu	Cum f	|x - x̄|	f|x - x̄|	(x - x̄)²	f(x - x̄)²
24 - 28	18	26	468	-20	-360	-4	-72	18	12.0548	216.9864	145.32	2615.78
29 - 33	7	31	217	-15	-105	-3	-21	25	7.0548	49.3836	49.77	348.39
34 - 38	6	36	216	-10	-60	-2	-12	31	2.0548	12.3288	4.22	25.32
39 - 43	15	41	615	-5	-75	-1	-15	46	2.9452	44.178	8.67	130.05
44 - 48	23	46	1058	0	0	0	0	69	7.9452	182.7396	63.13	1451.99
49 - 53	4	51	204	5	20	1	4	73	12.9452	51.7808	167.58	670.32
Total (Σ)	73		2778		-580		-116			557.3972		5241.83

i) Exact Mean $= \bar{x} = \frac{\Sigma fx}{\Sigma f} = \frac{2778}{73} = 38.0548$

2) Assume $= A + \frac{\Sigma fd}{\Sigma f} = 46 + \frac{-580}{73} = 38.0548$

3) Coding $= A + \frac{\Sigma fu}{\Sigma f} \times C = 46 + \frac{-116}{73} \times 5 = 38.0548$

iv) 1st and 3rd Quartile

$Q = LQ_1 + \frac{\left[\frac{1 \times N}{4} - \Sigma FQ_i\right]}{FQ_i} \times C$

1st Quartile class $= \frac{1 \times 73}{4} = 18.25$

$= 28.5 + \frac{[18.25 - 18]}{7} \times 5$

3rd Quartile class $= \frac{3 \times 73}{4} = 54.75$

$= 43.5 + \frac{[54.75 - 46]}{23} \times 5$

$= 45.4022$

Inter Quartile $= 45.4022 - 28.6786 = 16.7236$

Semi-Inter $= 16.7236 - 8$

vi) Decile: 3rd & 8th

$D_i = LD_i + \frac{\left[\frac{i \times N}{10} - \Sigma FD\right]}{FD_i} \times C$

3rd $= \frac{3 \times 73}{10} = 21.9$

$= 28.5 + \frac{[21.9 - 18]}{7} \times 5$

$= 31.2857$

8th $= \frac{8 \times 73}{10} = 58.4$

$= 43.5 + \frac{[58.4 - 46]}{23} \times 5$

$= 46.1957$

vii) 60th & 90th Percentile

$P_i = LP_i + \frac{\left[\frac{i \times N}{100} - \Sigma FP_i\right]}{FP_i} \times C$

$= \frac{60 \times 73}{100} = 43.8$

60th $= 38.5 + \frac{[43.8 - 31]}{15} \times 5$

$= 42.7667$

90th $= \frac{90 \times 73}{100} = 65.7$

$= 43.5 + \frac{[65.7 - 46]}{100} \times 5$

$= 44.485$

ii) Median $= L_1 + \frac{\left(\frac{N}{2} - fb\right)}{fm} \times C$

Median class $= \frac{73+1}{2} = 37$

$= 38.5 + \frac{(36.5 - 31)}{15} \times 5$

$= 40.3333$

iii) Mode $= L_1 + \left(\frac{fx}{fx + fy}\right) \times C$

$= 43.5 + \left(\frac{8}{8 + 19}\right) \times 5$

$= 44.9815$

viii) M.D $= \frac{\Sigma f|x - \bar{x}|}{\Sigma f}$

$= \frac{557.3972}{73} = 7.635$

ix) Variance $= \frac{\Sigma f(x - \bar{x})^2}{\Sigma f}$

$= \frac{5241.83}{73} = 71.805$

S.D $= \sqrt{\text{Variance}}$

$= \sqrt{71.8059}$

$= 8.4738$

Extra

C.V $= \frac{S.D}{\bar{x}} \times 100$

$= 22.2674$

Assignment
DONE

Class Interval	fi=f	x	fx	d (x-A)	fd	u	fu	Cum f	|x − x̄|	f|x − x̄|	(x − x̄)²	f(x − x̄)²
24 - 28	18	26	468	-20	-360	-4	-72	18	12.0548	216.9864	145.32	2615.78
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Total (Σ)	73		2778		-580		-116			557.3972		5241.83

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$= 45.4022$

Inter Quartile $= 45.4022 - 28.6786 = 16.7236$

Semi-Inter $= \frac{16.7236}{2} = 8.3618$

vi) Decile: 3rd & 8th

$D_i = LD_i + \frac{\left[\frac{i \times N}{10} - \Sigma FD\right]}{FD_i} \times C$

3rd $= \frac{3 \times 73}{10} = 21.9$

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ii) Median $= L_1 + \frac{\left(\frac{N}{2} - F_b\right)}{f_m} \times C$

Median class $= \frac{73+1}{2} = 37$

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$= 40.3333$

iii) Mode $= L_1 + \left(\frac{f_x}{f_x + f_y}\right) \times C$

$= 43.5 + \left(\frac{8}{8+19}\right) \times 5$

$= 44.9815$

viii) M.D $= \frac{\Sigma f|x - \bar{x}|}{\Sigma f} = \frac{557.3972}{73} = 7.6356$

xi) Variance $= \frac{\Sigma f(x - \bar{x})^2}{\Sigma f} = \frac{5241.83}{73} = 71.8059$

S.D $= \sqrt{\text{Variance}} = \sqrt{71.8059} = 8.4738$

Extra
C.V $= \frac{S.D}{\bar{x}} \times 100 = 22.2674$