Measures of Dispersion - 9.

Calculation of Quartile Deviation and Coefficient of Quartile Deviation for Individual series.

Illustration.

Find out the quartile deviation and Coefficient of quartile deviation of the following series.

S.No	1	2	3	4	5	6	7	8	9	10	11
Marks	10	15	20	25	30	35	40	45	50	55	60

Sol^n.

Q_1 = Size of $\frac{N+1}{4}$ th items

$= \frac{11+1}{4}$ th item.

Size of 3rd item = 20 marks

Q_3 = Size of $3\left(\frac{N+1}{4}\right)$ th item

$= 3\left(\frac{11+1}{4}\right) = 3\frac{12}{4} = 9$ th item.

= 50 marks

$QD = \frac{Q_3 - Q_1}{2} = \frac{50-20}{2} = \frac{30}{2} = 15$

Coefficient of $QD = \frac{Q_3 - Q_1}{Q_3 + Q_1} = \frac{50-20}{50+20} = \frac{30}{70}$

$= 0.43$

$QD = 15$, Coefficient of $QD = 0.43$ Ans

Illustration.

The following table show monthly wages of 10 workers:

monthly wages	120	150	170	180	181	187	190	192	200	210.

Sol:

S.No	1	2	3	4	5	6	7	8	9	10
monthly wages	120	150	170	180	181	187	190	192	200	210.

Q_1 = Size of $\frac{N+1}{4}$ th items Size of $\frac{10+1}{4}$ th items

= Size of 2.75 th items.

= Size of 2nd item + $\frac{3}{4}$ (Size of 3rd item − Size of 2nd item)

= $150 + \frac{3}{4}(170 - 150)$

$Q_1 = 165$

Q_3 = Size of $3\left(\frac{N+1}{4}\right)$th item = Size of 8.25th items

= Size of 8th item + $\frac{1}{4}$ (Size of 9th items − Size of 8th item)

$Q_3 = 192 + \frac{1}{4}(200 - 192) = 194.$

$QD = \frac{Q_3 - Q_1}{2} = \frac{194 - 165}{2} = \frac{29}{2} = 14.5$

Thank you.