

Problem Statement :

- a. The interquartile range. Compare the two interquartile ranges.
- b. Any outliers in either set.

The five number summary for the day and night classes is

	Minimum	Q_1	Median	Q_3	Maximum
Day	32	56	74.5	82.5	99
Night	25.5	78	81	89	98

What is IQR?how its Calculated?:-

- IQR-Inter quartile range → outlier range between quarters in the present dataset.
- Where,
 - $IQR = Q_3 - Q_2$
- $Q_3:75\%$ =data point, $Q_2:25\%$ =data point and indicating different from 50% data.

DAY:-

- $Q_1=56$, $Q_3=82.5$, median=74.5, min=32, max=99
- $IQR = Q_3 - Q_1$
- $=82.5 - 56.0 = 26.5$
- Then $IQR=26.5$

1.5rule:-

- $1.5rule = 1.5 * IQR$
- $=1.5 * 26.5 = 39.75$
- Then $1.5rule=39.75$

Lesser:-

- Lesser= $Q_1 - 1.5rule$
- $=56.0 - 39.75 = 16.25$
- Then lesser=16.25

Greater :-

$$\begin{aligned}\text{Greater} &= Q_3 + 1.5rule \\ &= 82.5 + 39.75 = 122.25\end{aligned}$$

Then greater=122.25

Night:-

Q1=78, Q3=89, Median=81, min=25.5, max=98.0

- $IQR = Q3 - Q1$
- $= 89 - 78 = 11$
- Then $IQR = 11$

1.5rule:-

- $1.5rule = 1.5 * IQR$
- $= 1.5 * 11 = 16.5$
- Then $1.5rule = 16.5$

Lesser:-

- $Lessor = Q1 - 1.5rule$
- $= 78 - 16.5 = 61.5$
- Then $lessor = 61.5$

Greater :-

- $Greater = Q3 + 1.5rule$
- $= 89 + 16.5 = 105.5$
- Then $greater = 122.2$

Conclusion:

- Day,
- The IQR is 26.5.
- Datapoint below 16.25 or above 122.25 are considered outlier.
- Night,
- The IQR is 11.
- Datapoint below 61.5 or above 122.2 are considered outliers