MEASURE OF LOCATION OF THE DATA

Interquartile Range(IQR)

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

Formula for IQR = Q3 – Q1

For Day Class:

Q1 = 56

Q3 = 82.5

IQR = 82.5 – 56 = 26.5

For Night Class:

Q1 = 78

Q3 = 89

IQR = 89-78 = 11

Compare 2 IDR:

Day IQR = 26.5

Night IQR = 11

The Day class has more variability compared to Night class.

Find Outlier:

Lower Outlier = Q1 – 1.5 * IQR

Upper Outlier = Q3 + 1.5 * IQR

For Day:

IQR = 26.5

Lower Outlier = 56 – 1.5 * 26.5 = 56 – 39.75 = 16.25

Upper Outlier = 82.5 + 1.5 * 26.5 = 82.5 + 39.75 = 122.25

Range = [16.5, 122.25]

All values (32 to 99) are inside so No outliers

For Night:

IQR = 11

Lower Outlier = 78 – 1.5 * 11 = 78 – 16.5 = 61.5

Upper Outlier = 89 + 1.5 * 11 = 89 + 16.5 = 105.5

Range = [61.5, 105.5]

All values (25.5 to 98) 25.5 is below 61.5 -> Outlier

Answer:

a. Interquartile Range:

- Day: 26.5
- Night: 11

b. Outliers:

- Day - > No outliers
- Night -> 25.5 is an outlier