

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 |

The observations are in order from smallest to largest, we can now compute the IQR by finding the Q_1 and Q_3 .

Day

Minimum=32

$Q_1=56$

$Q_3=82.5$

$IQR=82.5-56= 26.5$

The interquartile range is 26.5

$.15IQR=1.5(26.5)=39.75$

1.5 times the interquartile range is 39.75. Our fences will be 39.75 points below Q_1 and 39.75 points above Q_3 .

Lower fence: $56-39.75=16.25$

Upper fence: $82.5+39.75=122.25$

Day based any interquartile range that are less than 16.25 or greater than 122.25 are outliers. In this case, there are no outliers.

Night

Minimum=25.5

$Q1=78$

$Q3=89$

$IQR=89-78= 11$

The interquartile range is 11

$.15IQR=1.5(11)=16.5$

1.5 times the interquartile range is 16.5. Our fences will be 16.5 points below $Q1$ and 16.5 points above $Q3$.

Lower fence: $78-16.5=61.5$

Upper fence: $89+16.5=105.5$

Night based interquartile range that are less than 61.5 or greater than 105.5 are outliers. In this case, we have lower range outlier 25.5 and there are no greater outliers.