

Problem:

A. The IQR, compare two interquartile ranges

B. Any outliers in either set

The five number summary for a day and night classes is

	Day	Night
Minimum -	32	25.5
Q1	56	78
Median	74.5	81
Q3	82.5	89
Maximum	99	98

Solution:

For day:

$$\text{IQR} = \text{Q3} - \text{Q1}$$

$$= 82.5 - 56$$

$$= 26.5$$

$$1.5 \text{ IQR} = 1.5 * 26.5$$

$$= 39.75$$

$$\text{Lesser range of outlier} = \text{Q1} - 1.5 * \text{IQR}$$

$$= 56 - 39.75$$

$$= 16.25$$

$$\text{Greater range of outlier} = \text{Q3} + 1.5 * \text{IQR}$$

$$= 82.5 + 39.75$$

$$= 122.5$$

Hence, $32 > 16.25$ No lower outlier

$99 < 122.25$ No upper outlier

Therefore no outlier for day classes.

For night:

$$\mathbf{IQR=Q3-Q1}$$

$$=89-78$$

$$=11$$

$$1.5 \text{ IQR}= 1.5*11$$

$$=16.5$$

$$\text{Lesser range of outlier}=Q1-1.5*\text{IQR}$$

$$=78-16.5$$

$$=61.5$$

$$\text{Greater range of outlier}=Q3+1.5*\text{IQR}$$

$$=89+16.5$$

$$=105.5$$

Hence, $25.5 < 61.5$ Lesser outlier present

$98 < 105.5$ No upper outlier

Therefore lesser outlier for night classes are present.