Quartiles For Small Samples

There is no generally accepted method for identifying quartiles in small samples. We will use the following method.

If the sample size is even we will identify the lower and upper quartiles Q_1 and Q_3 by finding the median of the bottom half of the data and the median of the top half of the data.

If the sample size is odd we will ignore the middle item and proceed as above.

Ex1 6 items

$$\underline{5, 8, 9}, \underline{9, 10, 12}$$

$\uparrow$ $\uparrow$ $\uparrow$

Q_1 Q_2 Q_3

Lower Quartile $Q_1 = 8$

Median $Q_2 = 9$

Upper Quartile $Q_3 = 10$

Inter Quartile Range (IQR)

$= Q_3 - Q_1$

$= 10 - 8$

$= 2$

Ex 2 7 items

$$4, 6, 8, 10, 10, 12, 15$$

Q_1 Q_2 Q_3

LQ $Q_1 = 6$

Median $Q_2 = 10$

UQ $Q_3 = 12$

$$\text{IQR} = Q_3 - Q_1 = 12 - 6 = 6$$

Ex 3 8 items

$$5, 7, 7, 10, 12, 14, 15, 19$$

Q_1 Q_2 Q_3

LQ $Q_1 = 7$

Median $Q_2 = 11$

UQ $Q_3 = 14.5$

$$\text{IQR} = Q_3 - Q_1 = 14.5 - 7 = 7.5$$

Ex 4 9 items

$$3, 3, 6, 7, 7, 10, 12, 12, 15$$

Q_1 Q_2 Q_3

LQ $Q_1 = 4.5$

Median $Q_2 = 7$

UQ $Q_3 = 12$

IQR

$= Q_3 - Q_1$

$= 12 - 4.5$

$= 7.5$
