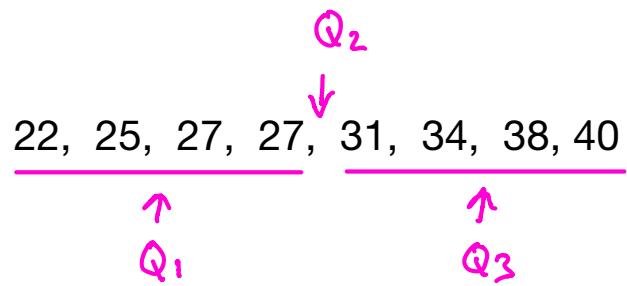# Median and Inter-Quartile Range

Firstly, we will learn how to identify the lower and upper quartiles of a small data set Q1and Q3

Essentially, these are representative of data values one quarter and three quarters of the way through an ordered data set.
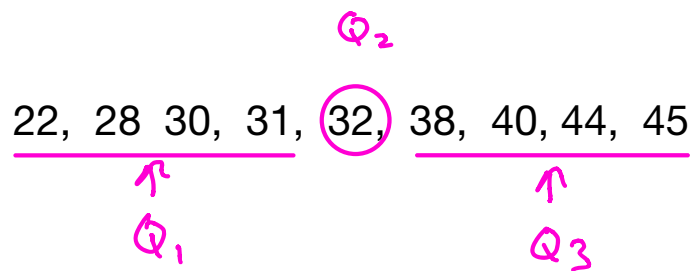
Example 1: 8 data items

$$Q_2$$

22, 25, 27, 27, 31, 34, 38, 40

$$Q_1 \qquad\qquad Q_3$$

Q1   =   26

Median =   29

Q3   =   36

IQR = Q3 - Q1

= 36 − 26

= 10

Example 2:   9 data items

$$Q_2$$

22, 28 30, 31, (32,) 38, 40, 44, 45

$$Q_1 \qquad\qquad Q_3$$

Q1   =   29

Median =   32

Q3   =   42

IQR = Q3 - Q1

= 42 − 29

= 13

Example 3: 10 data items

$$Q_2$$
$$\downarrow$$

33, 36, ⃝36, 37, 38, 40, 41, ⃝43, 44, 50

$$\underline{}_{Q_1} \qquad \underline{}_{Q_3}$$
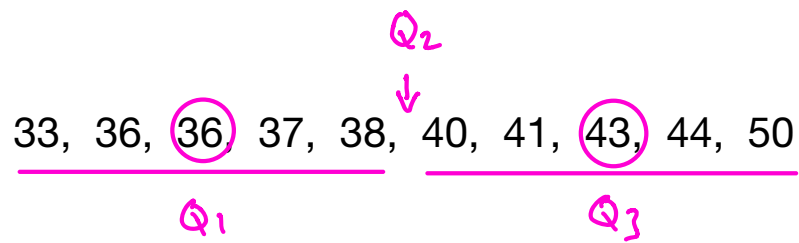
Q1   = 36

Median = 39

Q3   = 43

IQR = Q3 - Q1

= 43 - 36

= 7

Example 4: 11 data items

$$\frac{n+1}{2}$$

$$Q_2$$

22, 25, ⃝27, 27, 31, ⃝34, 38, 40, ⃝40, 44, 46

$$\underline{}_{Q_1} \qquad \underline{}_{Q_3}$$
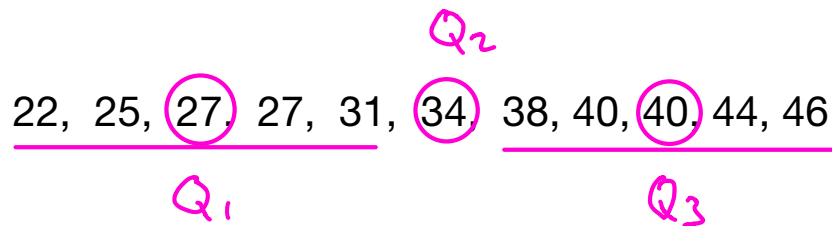
Q1   = 27

Median = 34

Q3   = 40

IQR = Q3 - Q1

= 40 - 27

= 13

1.

24, 30, 31, 35, 36, 38, 38, 41

2.

39, 43, 44 , 47, 50, 53, 53, 55, 56

3.

50, 53, 54, 56, 60, 64, 70, 71, 73, 74

4.

62, 62, 65, 68, 68, 72, 75, 76, 80, 83, 84