

## 8.4 MEASURES OF DISPERSION

MEASURES OF CENTRAL TENDENCIES  
(mean, median, mode)

DISPERSION - DESCRIBES THE SPREAD OF DATA

RANGE : BIGGEST # - SMALLEST #

MEDIAN : THE MIDDLE

- IF  $n$  IS ODD  $\rightarrow$  middle #

- IF  $n$  IS EVEN  $\rightarrow$  middle two average

$Q_1 =$  Quartile 1 : the median of the lower half of data

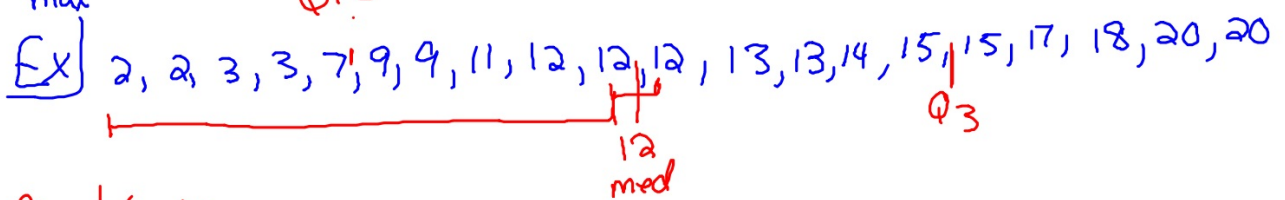
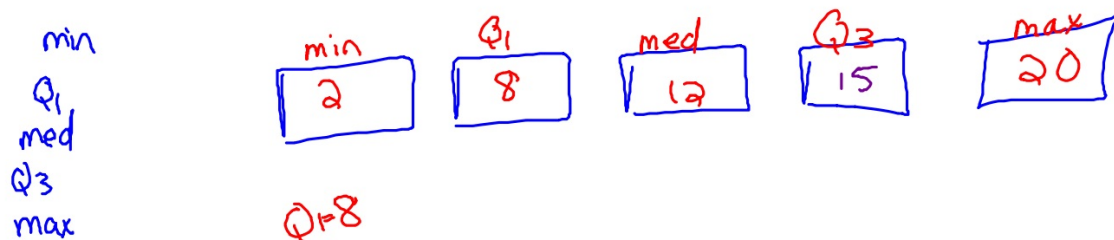
$Q_3 =$  Quartile 3 : the median of the upper half of data

$$Q_1 = \frac{1}{4}(n+1)\text{th term}$$

$$Q_3 = \frac{3}{4}(n+1)\text{th term}$$

# FIVE STATISTICAL SUMMARY (5-number Summary)

\*  $Q_1$  and  $Q_3$  - throw out the median 1st



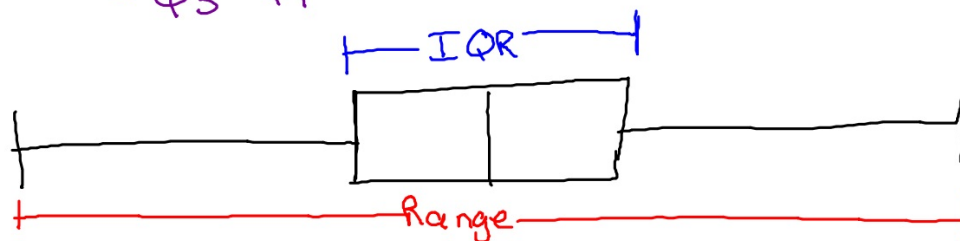
$$Q_1 = \frac{1}{4}(n+1)th$$

$$= \frac{1}{4}(21)$$

$$= 5.25 \text{ term}$$



IQR = Interquartile Range  
 $= Q_3 - Q_1$



Symmetric  $\rightarrow$  no outliers

OUTLIERS - AN OUTLIER IS ANY AT LEAST  $1.5 \text{ IQR}$  ABOVE  $Q_3$  OR  $1.5 \text{ IQR}$  BELOW  $Q_1$

Ex) 18, 27, 34, 52, 54, 59, 61, 68, 78, 82, 85, 87, 91, 93, 100

a) make a box + whisker (box plot) (on calculator)

b) is 18 an outlier?  $\text{IQR} = Q_3 - Q_1 = 87 - 52 = 35$   
 $Q_1 - 1.5(\text{IQR}) = 52 - 1.5(35) = -0.5$   $18 > -0.5$  so 18 is NOT

HW 8F p.270 all