✡ Measure of position

1. Percentage
2. percentile
3. Percentile Rank
4. Quartile
5. 5-number Summary
6. IQR
7. Lowerfence / upperfence
8. Box and whiskers plot

① $\{2, 4, 7, 5, 8, 9, 10\}$ odd !

$\Rightarrow \frac{3}{7} \times 100 \Rightarrow 0.42 \Rightarrow 42\%$

② $\{2, 2, 3, 4, 5, 5, 5, 6, 7, 8, 8, 8, 9, 9, 10, 11, 11, 12\}$ (4.75 ↓)

$\Rightarrow$ 10 Rank !

$$10\text{-}\%\text{ile} = \frac{14}{18} \times 100$$

$$= 0.778 \times 100$$

$$\Rightarrow 77.8\ \%$$

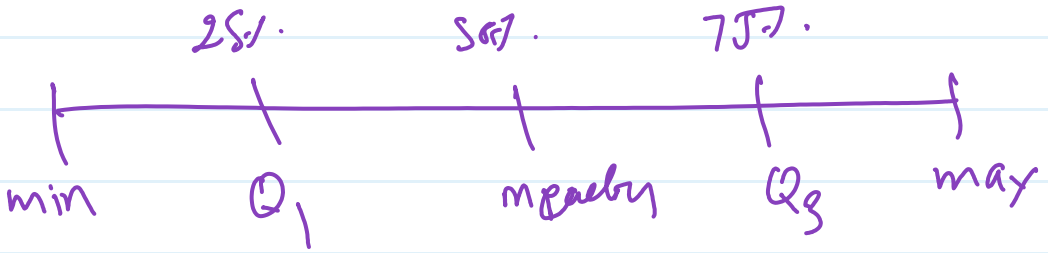
(3) 25%ile ?

$$= \frac{25}{100} \times (18+1)$$

$$\Rightarrow 4.75 \quad \underline{\text{index position}}$$

$$\Rightarrow \frac{4+5}{2} \Rightarrow \underline{4.5}$$

(4) Quartile



⑤ IQR (Inter quartile Range)

$$IQR = Q_3 - Q_1$$

⑥ Lower value $= Q_1 - 1.5(IQR)$

Upper value $= Q_3 + 1.5(IQR)$

✱ 5-Number Summary

Eg: {1, 2, 2, 2, 3, 3, 4, 5, 5, 5, 6, 6, 6, 6, 7, 8, 8, 9, 27}

$$Q_1 = \frac{25}{100} \times (n+1)$$

$$= \frac{25}{100} \times (19+1) = 5^{th} \text{ index}$$

$$= 3$$

$$Q_3 = \frac{75}{100} \times (19+1) = 15^{th} \text{ index}$$

$$= 7$$

$$IQR = 7 - 3 = 4$$

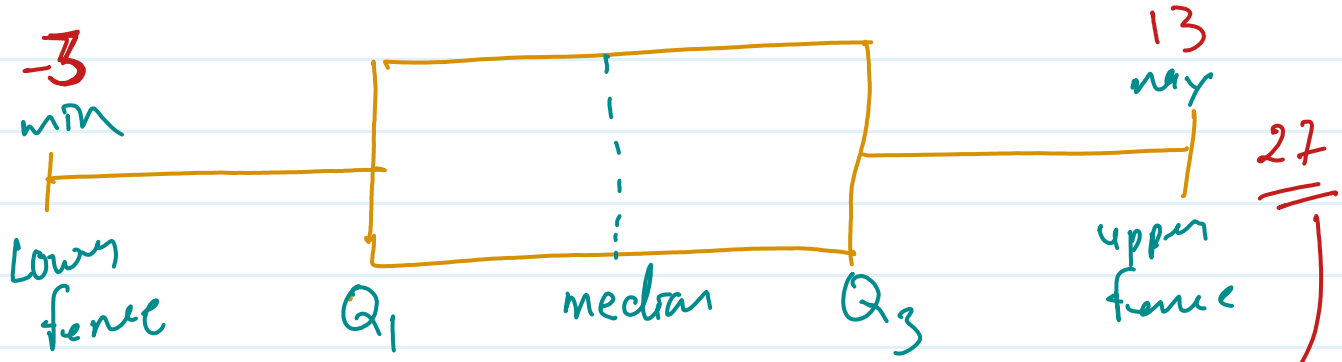
$$\text{Lower fence} = 3 - 1.5(4)$$

$$= -3$$

$$\text{upper fence} = 7 + 1.5(4)$$

$$= 13$$

⑧ Box and whiskers plot



Outlies