

① Mean

Population ^(N)

$$\mu = \frac{\sum_{i=1}^N x_i}{N}$$

Sample ⁽ⁿ⁾

$$\bar{x} = \frac{\sum_{i=1}^n x_i}{n}$$

eg.

$$v_1 = [1, 2, 3, 4, 5, 6, 7]$$

$$= \frac{1+2+3+4+5+6+7}{7}$$

$$= 28 / 7 = ?$$

⑧ Mode

* $v_1 = [2, 2, 4, 5, 6, 7, 6, 8, 9, 2]$

<u>mode</u> = 2 = 3	7 = 1
4 = 1	8 = 1
5 = 1	9 = 1
6 = 2	

single mode = 2 ✓

* $v_2 = [2, 2, 4, 4, 6, 6]$

$$= 2 = 2, 4 = 2, 6 = 2$$

multi mode = (2, 4, 6) ✓

* $v_3 = [1, 2, 3, 4, 5]$

no mode

③ Median $\hat{=}$ middle value

* When count of values is odd

$$v_1 = [2, 3, 10, 5, 4] \leftarrow$$

$$\underline{\text{Step I}} = [2, 3, \boxed{4}, 5, 10] \leftarrow$$

* When count of values is even

$$v_2 = [10, 2, 5, 6, 8, 3] \leftarrow$$

$$\underline{\underline{\text{Step I}}} = [2, 3, \boxed{5}, \boxed{6}, 8, 10]$$

$$\text{Step II} = \frac{5+6}{2} = \frac{11}{2}$$

$$= \boxed{5.5}$$

④ min value = minimum.

$$v1 = [2, 10, 5, 3, 1]$$

$$\text{min} = 1$$

⑤ max value = maximum

$$v1 = [2, 10, 5, 6, 8, 2]$$

$$\text{max} = 10$$

⑥ range = max - min

$$v1 = [2, 5, 10, 12, 20]$$

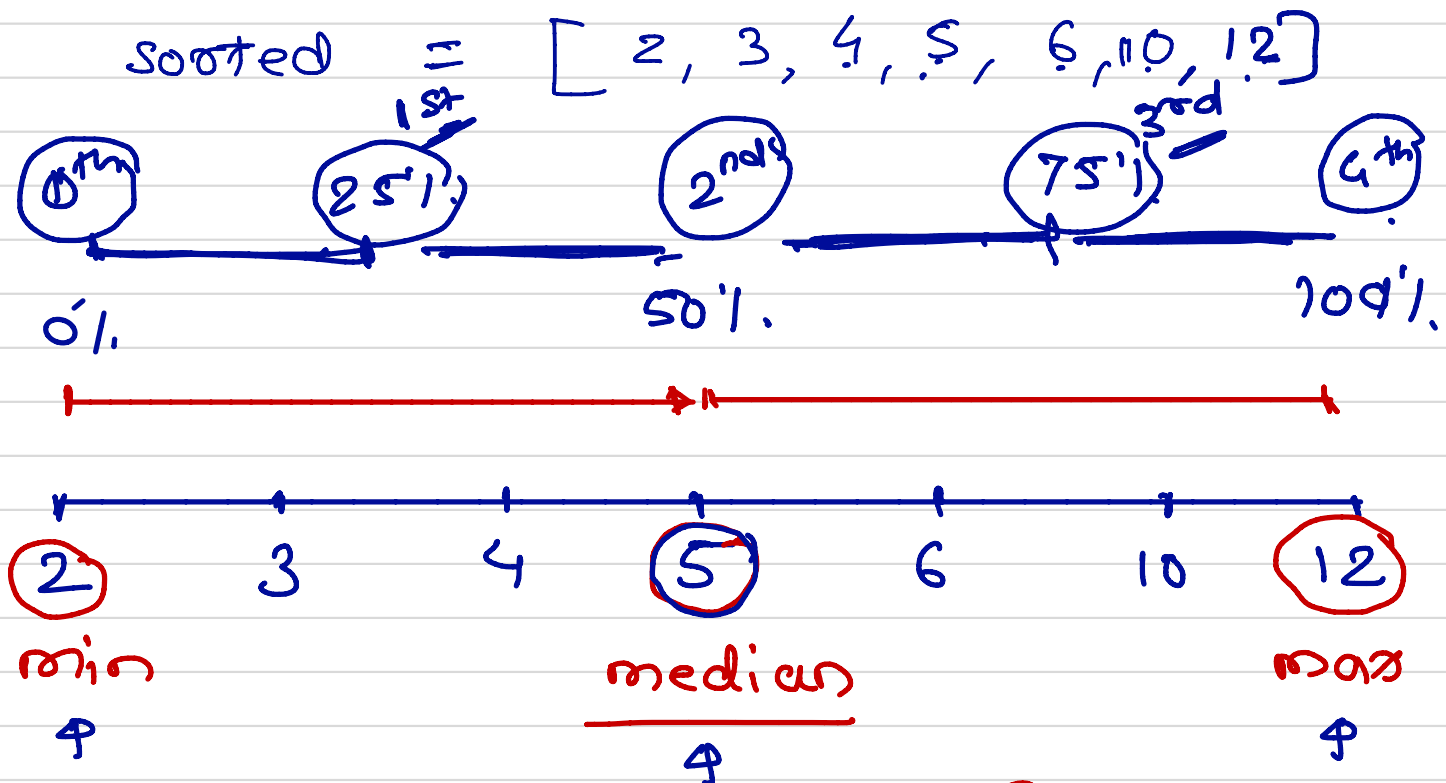
$$\text{range} = \text{max} - \text{min}$$

$$= 20 - 2$$

$$\text{range} = 18$$

⑦ Quantile / percentile

$$x_1 = [2, 4, 5, 6, 3, 10, 12]$$



$$\text{first half} = [2, 3, 4]$$

$$1^{\text{st}} \text{ Quantile (median)} = 3 \checkmark$$

$$\text{second half} = [6, 10, 12]$$

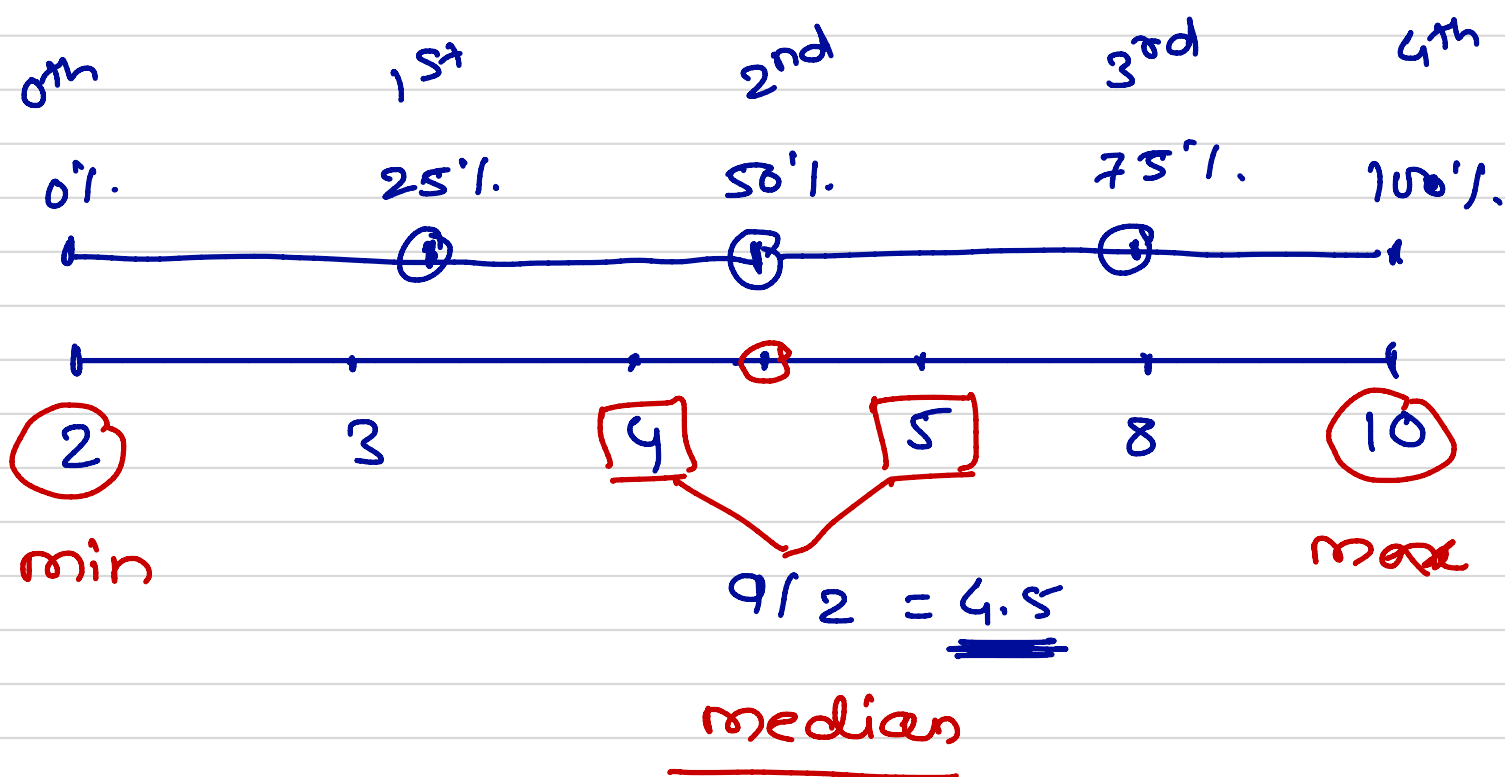
$$2^{\text{nd}} \text{ Quantile (median)} = 10 \checkmark$$

$$\boxed{\text{IQR}} = 10 - 3 = 7$$

* when dataset contains even no^o of values

$$v1 = [10, 5, 2, 3, 4, 8]$$

$$\text{Sorted} = [2, 3, 4, 5, 8, 10]$$



$$\text{first half} = [2, 3, 4]$$

$$1^{\text{st}} \text{ Quartile (median)} = 3$$

$$\text{Second half} = [5, 8, 10]$$

$$2^{\text{nd}} \text{ Quartile (median)} = 8$$

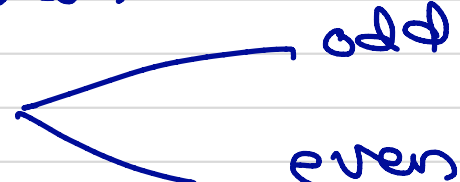
$$IQR = 8 - 3 = 5$$

* Quantiles

0th = min

1st = ? 

2nd = median

3rd = ? 

4th = max

⑧ Interquartile range (IQR)

$$= 3^{\text{rd}} \text{ Quantile} - 1^{\text{st}} \text{ quantile}$$