5 Number Summary

https://youtu.be/rrKlRMenexI

1. ## What is 5 Number summary?

   - The five number summary includes 5 items:
     - The minimum.
     - Q1 (the first quartile, or the 25% mark).
     - The median.
     - Q3 (the third quartile, or the 75% mark).
     - The maximum.
   - The five-number summary gives information about the location (from the median), spread (from the quartiles) and range (from the sample minimum and maximum) of the observations.

2. Why is it Needed?

- The five number summary gives you a rough idea about what your data set looks like. for example, you'll have your lowest value (the minimum) and the highest value (the maximum). Although it's useful in itself, the main reason you'll want to find a five-number summary is to find more useful statistics, like the interquartile range, sometimes called the middle fifty
- To easily compare two five number summaries at a glance, we can **use a boxplot**, or box and whiskers graph

3. How to find 5 Number Summary?

- **Step1:**
  Write in ascending order
- **Step2:**
  Find the Maximum & the Minimum

element

- **Step3:**
  Find the Median
- **Step4:**
  Create 2 Groups: Group 1 (elements below median) & Group 2 (elements above median)
- **Step5:**
  - *Q1 = median of lower half of list(Group 1)*
  - *Q3 = median of upper half of list(Group 2)*
  - **IQR(Interquantile Range)** = *Q3 - Q1*

4. ## Example

Q) 5, 2, 1, 12, 27, 7, 9, 15, 18, 19, 6

Ans Step 1: ↑ing order ⇒ 1, 2, 5, 6, 7, 9, 12, 15, 18, 19, 27

Step 2: $min^m = 1$ $max^m = 27$

Step 3: median ⇒ Here, 9 ∴ $\frac{11+1}{2}^{th} = 6^{th}$ observation $= 9$

Step 4: Grouping ⇒ (1, 2, 5, 6, 7), 9, (12, 15, 18, 19, 27)

Group 1, median, Group 2

Step 5: (1, 2, 5, 6, 7), 9, (12, 15, 18, 19, 27)

Q1, Q3

$IQR = Q3 - Q1 = 18 - 5 = 13$