## Formulae:

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=> mean: $\frac{\text{Sum of all}}{\text{Total count}} = \bar{x}$

=> median: $\bar{x}_1 = \frac{\text{two medium value addition}}{\text{Total count}}$

median: $\tilde{x} = \frac{1}{2}\left[x_{n/2} + x_{(n/2)+1}\right]$ (even)

odd $\left(\frac{n+1}{2}\right)$

=> Arrange: Ascending

=> S.D: $\sqrt{\text{varience}}$

Varience $\sigma^2 = \frac{1}{N}\sum_{i=1}^{N}(x_i - \mu)^2$

$s^2 = \frac{1}{n-1}\sum_{i=1}^{n}(x_i - \bar{x})^2$

=> A∩B => Combine elements

=> Histogram plot 

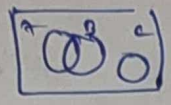

=> Dot plots

=> Range => R: $x_{max} - x_{min}$

=> frequency $f_1$: Total count of class interval

=> R.F = $\frac{f_1}{\text{Total freq}}$

=> AUC => All non Combine points

=> Venn diagram 


$B_1, B_2, B_3$ are three events, For a given event A $P(A/B_1), P(A/B_2), P(A/B_2)$

S - C
A - P

-> Baye's Rule Development

- Bayes Rule allow us to Find the Conditional probability that $B_1$ (or $B_2$ or $B_3$) given that A has occured

$$P(B_1/A) = \frac{P(B_1 \cap A)}{P(A)} = \frac{P(A/B_1)\,P(B_1)}{P(A/B_1)\,P(B_1) + P(A/B_2)(PB_2) + P(A/B_3)\,P(B_3)}$$

$$= \frac{P(A/B_1)\,P(B_1)}{\sum_{i=1}^{3} P(A/B_i)\,P(B_i)}$$

-> Law of Total Probability

$$P(A) = P(A \cap B_1) + P(A \cap B_2) + P(A \cap B_3)$$

$$= P(A/B_1)\,P(B_1) + P(A/B_2)\,P(B_2) + P(A/B_3)\,P(B_3)$$

$$P(A) = \sum_{i=1}^{K} P(A/B_i)\,P(B_i)$$

$$P(B_r/A) = \frac{P(A/B_r)\,P(B_r)}{\sum_{i=1}^{K} P(A/B_i)\,P(B_i)}$$

-> $A \cap B = B \cap A$
-> $A \cap A = A$
-> $A \cap S = A$
-> $A \cap \phi = \phi$
-> $A \cap A' = \phi$
-> $A \cap (B \cap C) = (A \cap B) \cap C$
$(A \cap B)' = A' \cup B'$

-> $A \cup B = B$
-> $A \cup A = A$
-> $A \cup S = A$
-> $A \cup \phi = A$
-> $A \cup A' = S$
-> $A \cup (B \cup C) = (A \cup B) \cup C$
-> $(A \cup B') = A' \cap B')$

Combination -> ${}^nP_r = \frac{n!}{(n-r)!}$

-> ${}^nC_r = \begin{bmatrix} n \\ r \end{bmatrix} = \frac{n!}{r!(n-r)!}$

$$P(A/F) = \frac{P(A \cap F)}{P(F)}$$

-> $P(C/A \cap B) = \frac{P(A \cap B \cap C)}{P(A \cap B)}$

-> $P(A \cup B/C) = P(A/C) + P(B/C) - P(A \cap B/C)$

$$P(A/F) = \frac{P(F/A)\,P(A)}{P(F)}$$