

Standard Deviation:

$$\sigma = \sqrt{\frac{\sum (x_i - \mu)^2}{N}}$$

Combinational Formula:

$$C_r^n = \frac{n!}{r!(n-r)!}$$

Permutation Formula:

$$P_r^n = \frac{n!}{(n-r)!}$$

Binomial Distribution Formula:

$$P(Y = y) = \binom{n}{x} p^x q^{n-x}$$

Geometric Distribution Formula:

$$P(Y = k) = (1 - p)^{k-1} \cdot p$$

Negative Binomial Distribution Formula:

$$P(Y = k) = \binom{k-1}{r-1} \cdot p^r \cdot (1 - p)^{k-r}$$

Conditional Probability Theorem:

$$P(A|B) = \frac{P(A \cap B)}{P(B)}$$

Multiplication Rule:

$$P(A \cap B) = P(A|B) \cdot P(B)$$

Baye's Theorem:

$$P(A|B) = \frac{P(B|A) \cdot P(A)}{P(B)}$$