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

$$\tilde{x} = \begin{cases} x_{\left(\frac{n+1}{2}\right)}, & n \text{ odd} \\ \dfrac{x_{(n/2)} + x_{(n/2+1)}}{2}, & n \text{ even} \end{cases}$$

$$\bar{x}_{\text{trim}} = \frac{1}{n-2k}\sum_{i=k+1}^{n-k} x_{(i)}$$

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

$$s = \sqrt{s^2} \qquad \text{df} = n - 1$$

$$0 \le P(A) \le 1 \qquad P(A) + P(A^c) = 1$$

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

$$\begin{aligned} P(A \cup B \cup C) = {} & P(A) + P(B) + P(C) \\ & - P(A \cap B) - P(A \cap C) - P(B \cap C) \\ & + P(A \cap B \cap C) \end{aligned}$$

$$P\left(\bigcup_{i=1}^{n} A_i\right) = \sum_{i=1}^{n} P(A_i) \quad \text{(mutually exclusive)}$$

$$P(A) = \frac{|A|}{|S|}$$

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

$$P(B \mid A) = \frac{P(A \cap B)}{P(A)}, \quad P(A) > 0$$

$$P(A) = \sum_{i=1}^{k} P(A \mid B_i)P(B_i)$$

$$P(B_r \mid A) = \frac{P(B_r)P(A \mid B_r)}{\sum_{i=1}^{k} P(B_i)P(A \mid B_i)}$$

$$f(x) \ge 0 \qquad \sum_x f(x) = 1$$

$$P(X = x) = \binom{n}{x} p^x (1-p)^{n-x}$$

$$P(X = x) = (1-p)^{x-1} p$$

$$F(x) = P(X \le x) = \sum_{t \le x} f(t)$$

$$P(a < X \le b) = F(b) - F(a)$$

$$P(X = x) = 0 \quad \text{(continuous)}$$