PLEASE DO NOT WRITE OR MAKE ANY MARKS ON THIS FORMULA SHEET

Finite Mathematics Formula Sheet

$I = PVrt$ $\quad FV = PV(1 + rt)$ $\quad PV = \frac{FV}{1+rt}$ $\quad I = FV - PV$

$FV = PV\left(1 + \frac{r}{m}\right)^{mt} = PV(1 + i)^n$ $\quad i = \frac{r}{m}$ $\quad n = m \cdot t$ $\quad FV = PVe^{rt}$

$APY = r_E = \left(1 + \frac{r}{m}\right)^m - 1$ $\quad PV = \frac{FV}{(1+i)^n}$ or $PV = FV(1 + i)^{-n}$

$$FV = PMT\left[\frac{\left(\left(1+\frac{r}{m}\right)^{(m\cdot t)} - 1\right)}{\left(\frac{r}{m}\right)}\right] = PMT\left[\frac{\left((1+i)^n - 1\right)}{i}\right] \qquad PMT = FV\frac{\left(\frac{r}{m}\right)}{\left(\left(1+\frac{r}{m}\right)^{(m\cdot t)} - 1\right)} = FV\frac{i}{\left((1+i)^n - 1\right)}$$

$$PV = PMT\left[\frac{\left(1-\left(1+\frac{r}{m}\right)^{-(m\cdot t)}\right)}{\left(\frac{r}{m}\right)}\right] = PMT\left[\frac{\left(1-(1+i)^{-n}\right)}{i}\right] \qquad PMT = PV\frac{\left(\frac{r}{m}\right)}{\left(1-\left(1+\frac{r}{m}\right)^{-(m\cdot t)}\right)} = PV\left[\frac{i}{\left(1-(1+i)^{-n}\right)}\right]$$

$n(A \cup B) = n(A) + n(B) - n(A \cap B)$ $\qquad P(E) = \frac{n(E)}{n(S)}$

$P(E \cup F) = P(E) + P(F) - P(E \cap F)$ $\qquad P(E) = 1 - P(E')$ and $P(E') = 1 - P(E)$

$O(E) = \frac{P(E)}{P(E')},\ P(E') \neq 0$ $\qquad P(E) = \frac{m}{m+n}$ and $P(E') = \frac{n}{m+n}$ when $O(E) = \frac{m}{n}$

$P(E \mid F) = \frac{P(E \cap F)}{P(F)}$, where $P(F) \neq 0$ $\qquad P(E \cap F) = P(F) \cdot P(E \mid F)$ or $P(E \cap F) = P(E) \cdot P(F \mid E)$

$$P(F \mid E) = \frac{P(F) \cdot P(E \mid F)}{P(F) \cdot P(E \mid F) + P(F') \cdot P(E \mid F')}$$

$$P(F_i \mid E) = \frac{P(F_i) \cdot P(E \mid F_i)}{P(F_1) \cdot P(E \mid F_1) + P(F_2) \cdot P(E \mid F_2) + \ldots + P(F_n) \cdot P(E \mid F_n)}$$

$E(x) = x_1p_1 + x_2p_2 + x_3p_3 + \ldots + x_np_n$

$E(x) = np$

$n! = n(n-1)(n-2)\cdots(3)(2)(1)$ $\quad 0! = 1$

${}_nP_r = P(n,r) = \dfrac{n!}{(n-r)!}$

$\dfrac{n!}{n_1!\,n_2!\cdots n_r!}$

${}_nC_r = C(n,r) = \dfrac{n!}{r!(n-r)!}$

$P(x) = {}_nC_x\, p^x(1-p)^{n-x}$

$\mu = \bar{x} = \dfrac{\sum x}{n}$ $\quad \sigma = \sqrt{\dfrac{\Sigma(x^2) - n(\mu^2)}{n}} = \sqrt{\dfrac{\Sigma(x-\mu)^2}{n}}$ $\quad s = \sqrt{\dfrac{\sum(x^2) - n(\bar{x}^2)}{n-1}} = \sqrt{\dfrac{\sum(x-\bar{x})^2}{n-1}}$

$\mu = \bar{x} = \dfrac{\sum(xf)}{n}$ $\quad \sigma = \sqrt{\dfrac{\Sigma(fx^2) - n(\mu^2)}{n}} = \sqrt{\dfrac{\Sigma(x-\mu)^2 \cdot f}{n}}$ $\quad s = \sqrt{\dfrac{\sum(f\cdot x^2) - n\cdot(\bar{x}^2)}{(n-1)}} = \sqrt{\dfrac{\sum[(x-\bar{x})^2 \cdot f]}{(n-1)}}$

$z = \dfrac{x-\mu}{\sigma}$ $\quad \mu = np$ $\quad \sigma = \sqrt{np(1-p)}$

```
                1
            1       1
        1       2       1
    1       3       3       1
1       4       6       4       1
1   5       10      10      5       1
⋮       ⋮       ⋮       ⋮       ⋮
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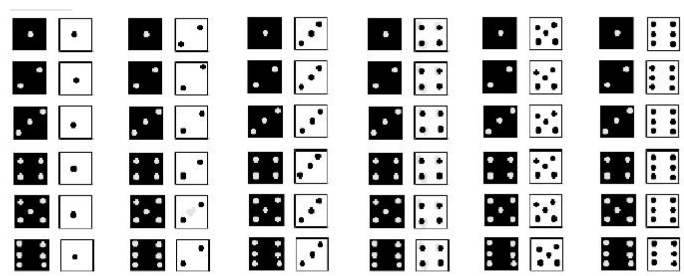
Outcomes of Rolling Two Dice (1 black, 1 white)



- A standard deck of cards has a total of 52 cards.
- The cards are divided into four suits: clubs, diamonds, hearts, and spades.
- Clubs and spades are black; diamonds and hearts are red.
- Each suit has 13 cards: Ace, 2, 3, 4, 5, 6, 7, 8, 9, 10, jack, queen, king.
- Jacks, queens, and kings are called face cards.

Clubs	**A♣**	**2♣**	**3♣**	**4♣**	**5♣**	**6♣**	**7♣**	**8♣**	**9♣**	**10♣**	**J♣**	**Q♣**	**K♣**
Diamonds	**A♦**	**2♦**	**3♦**	**4♦**	**5♦**	**6♦**	**7♦**	**8♦**	**9♦**	**10♦**	**J♦**	**Q♦**	**K♦**
Hearts	**A♥**	**2♥**	**3♥**	**4♥**	**5♥**	**6♥**	**7♥**	**8♥**	**9♥**	**10♥**	**J♥**	**Q♥**	**K♥**
Spades	**A♠**	**2♠**	**3♠**	**4♠**	**5♠**	**6♠**	**7♠**	**8♠**	**9♠**	**10♠**	**J♠**	**Q♠**	**K♠**