

Prob-  
 a-  
 bil-  
 ity  
 The-  
 ory:  
 Most  
 Sci-  
 ences:  
 Computer  
 Sci-  
 ence:  
 Cryptography:  
 ran-  
 dom  
 sam-  
 ple

$$\begin{aligned}
 &\Omega \\
 &Pr : \\
 &\Omega \rightarrow \\
 &R \\
 &\omega \in \\
 &\Omega \\
 &0 \leq \\
 &Pr[\omega] \leq \\
 &1 \\
 &\sum_{\omega \in \Omega} Pr[\omega] =
 \end{aligned}$$

$$\begin{aligned}
 &1 \\
 &\omega \in \\
 &\Omega \\
 &E \subseteq \\
 &\Omega \\
 &E \\
 &Pr[E] = \\
 &\sum_{\omega \in E} Pr[\omega] \\
 &Pr[\emptyset] =
 \end{aligned}$$

$$\begin{aligned}
 &0 \\
 &E_1 \cap \\
 &E_2 \\
 &E_1 \\
 &E_2 \\
 &Pr[E_1 \cap \\
 &E_2] =: \\
 &Pr[E_1, E_2] =: \\
 &Pr[E_1 \wedge \\
 &E_2] =: \\
 &Pr[E_1 \text{ and } E_2]
 \end{aligned}$$

$$\begin{aligned}
 &E_1 \cup \\
 &E_2 \\
 &E_1 \\
 &E_2 \\
 &Pr[E_1 \cup \\
 &E_2] =: \\
 &Pr[E_1 \vee \\
 &E_2] =: \\
 &Pr[E_1 \text{ or } E_2]
 \end{aligned}$$

$$\begin{aligned}
 &\bar{E} = \\
 &\Omega \setminus E \\
 &E \\
 &\bar{E} \\
 &Pr[\bar{E}] =: \\
 &Pr[\neg E] =: \\
 &Pr[\text{not } E]
 \end{aligned}$$

$$\begin{aligned}
 &A \subseteq \\
 &B \\
 &A \\
 &B \\
 &A \Rightarrow \\
 &B \\
 &A, B \subseteq \\
 &\Omega \\
 &Pr[A \cup \\
 &B] = \\
 &Pr[A] + \\
 &Pr[B] - \\
 &Pr[A \cap \\
 &B] \\
 &Pr[\bar{A}] = \\
 &1 - \\
 &Pr[A] \\
 &A \subseteq \\
 &B \\
 &Pr[A] \leq \\
 &Pr[B]
 \end{aligned}$$

union-  
 bound

$$\begin{aligned}
 &A, B \subseteq \\
 &\Omega \\
 &Pr[A \cup \\
 &B] \leq
 \end{aligned}$$