



Consider the following example: we are rolling a fair 6-sided dice.

A = the outcome is even.

B = the outcome is greater than 3.

Rule 1: For any event A, $0 \leq P(A) \leq 1$.

Rule 2: $P(S) = 1$.

Rule 3: If A is an event, then

$$P(A') = 1 - P(A)$$

Rule 4: If A and B are any two events, then

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

Rule 5 (Law of Total Probability):

$$P(A) = P(A \cap B) + P(A \cap B')$$

