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**AXIOM:** Probability of obtaining an outcome in sample, $S$, equals $1 \equiv P(S) = 1$

**AXIOM:** Probability of not obtaining any outcome in sample, $S$, equals $0 \equiv P(\varnothing) = 0$

**AXIOM:** Probability of event $A$ is in the range from 0 to $1 \equiv 0 \leq P(A) \leq 1$

**THM:** If $A$ and $B$ are events, the probability of event $A \cup B$ equals $P(A) + P(B) - P(A \cap B) \equiv P(A \cup B) = P(A) + P(B) - P(A \cap B)$

**COR:** If $A$ and $B$ are mutually exclusive, the probability of event $A \cup B$ equals $P(A) + P(B) \equiv P(A \cup B) = P(A) + P(B)$