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Axioms of Probability

- Axiom 1: The probability P(A) of any event A satisfies 0 ≤ P(A) ≤ 1.
- Axiom 2: If S is the sample space, then P(S)=1.
- Axiom 3: If A_1, A_2, A_3, \dots is an infinite collection of **disjoint** events: $P(A_1 \cup A_2 \cup A_3 \cup \dots) = \sum_{i=1}^{\infty} P(A_i)$



Proposition

• For any events A and B, the probability of either event occurring is the following:

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





