

1 Independence

1.1 Concepts

1. We say that two events A, B are **independent** if $P(A \cap B) = P(A)P(B)$.

1.2 Examples

2. When rolling a fair 6-sided die, are the events A that the number rolled is greater than or equal to 3, and B that the number rolled is odd, independent?

1.3 Problems

3. True False If A, B are mutual exclusive events that are independent, then $P(A) = 0$ or $P(B) = 0$.
4. True False If A, B are independent events and B, C are independent, then A, C are independent.
5. I roll two die. Are the events that the first die roll is a 1 and that the sum of the two dice is a 7 independent?
6. Let E be the event that a randomly generated bit string of length three contains an odd number of 1s and let F be the event that the string starts with 1. Are E and F independent?