

1. Suppose that E and F are events. Show that $P(E \cap F) \geq P(E) + P(F) - 1$.

2. Find the probability of rolling at least one 6 on a pair of dice.

3. What is the conditional probability of a fair coin landing tails twice, given that the first flip was a tail?

4. Suppose I select a ball by picking from two boxes at random and selecting a ball at random from that box. Box A has 2 white and 3 blue balls, and Box B has 4 white and 1 blue. If I select a blue ball, what is the probability I chose Box A?

5. What is the probability a random integer chosen is not divisible by p_1 or p_2 , where p_1, p_2 are prime?

6. Use Bayes' Theorem to solve the Monty Hall problem.