

# Conditional Probability: Practice Problems

January 2023

1. A coin is flipped four times. What is the probability of getting an equal number of heads and tails given that the outcomes on the first and the last flips are not the same?
2. We roll two fair dice. What is the probability to have 2 on the first die given that the sum of two numbers is 5?
3. One in 50 potential buyers sees a magazine ad, one in five sees a TV ad and one in 100 sees both. One in three purchases the product after seeing the ad, one in 10 without seeing it. What is the probability that a randomly selected potential customer will purchase the product?
4. There are two bowls: bowl  $A$  contains 2 blue and 3 red balls, and bowl  $B$  contains 1 blue and 4 red balls. A blue ball was randomly picked from one of the bowls. What's the probability that it was bowl  $A$ ?
5. A box contains 3 coins with a head on each side, 4 coins with a tail on each side, and 2 fair coins. One of these nine coins is selected at random and tossed once. Suppose that the toss does result in a head. What is the probability that the coin used for tossing was fair?