

**COMP S264F Discrete Mathematics**  
**Tutorial 10: Discrete Probability**

**Question 1.** What is the probability that when a coin is flipped six times in a row, it lands heads up every time?

**Question 2.** Find the probability of selecting a five-card poker hand that

- (a) does not contain the queen of hearts.
- (b) contains the two of diamonds, the three of spades, the six of hearts, the ten of clubs, and the king of hearts.
- (c) contains at least one ace.
- (d) contains two pairs (i.e., two of each of two different kinds and a fifth card of a third kind).

**Question 3.** In a lottery, you can choose 6 numbers out of the first 56 numbers for a ticket. You win if your ticket contains exactly one of the 6 numbers selected by the lottery commission. Find the probability of choosing a winning ticket.

**Question 4.** Suppose that 100 people enter a contest and that different winners are selected at random for first, second, and third prizes. What is the probability that Tom wins one of these prizes if he is one of the contestants?

**Question 5.** Find the probability that the first child of a family with five children is a boy or that the last two children of the family are girls, if a boy and a girl are equally likely.