Problem 1. A coin is flipped 7 times.

(a) Count the number of possible outcomes (ordered with replacement).

(b) Find the probability of obtaining at least 5 heads.

Problem 2. Five cards are dealt from a shuffled deck.

(a) Count the number of possible outcomes (unordered without replacement).

(b) Find the probability of a flush (five cards of the same suit).

Problem 3. A bin contains 3 red balls, 4 white balls, and 5 blue balls. Draw 3 balls at random.

(a) Count the number of possible outcomes (unordered without replacement).

(b) Find the probability of drawing 3 blue balls.

(c) Find the probability of drawing one ball of each color.

Problem 4. Bob is a lobster in a tank with six other lobsters. The chef reaches in, randomly pulls out two lobsters, and throws them into a pot of boiling water, where they perish in agony. What are the chances that Bob survives?

(a) Find the sample space, and find the cardinality of the sample space.

(b) Describe the event, and find the cardinality of the event. Find the probability of the event.