Algebra II
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Homework 0509
Monday, May 9, 2022

Name:

Problem 1. A coin is flipped ten times.

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

(b) Find the probability that exactly half are heads.

Problem 2. A bin contains 20 balls. Four of the balls are green, eight are blue, and twelve are orange. Five balls are drawn at random.

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

(b) Find the probability that all are green.

(c) Find the probability that all are blue.

(d) Find the probability that all are orange.

(e) Find the probability that there is one ball of each color.

Problem 3. Five cards are dealt from a shuffled deck and placed in a line, so the order matters.

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

(b) Find the probability of a straight flush (same suit in sequential rank order).

Problem 4. Three dice of different colors are rolled.

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

(b) Find the probability that all three dice have the same value.

(c) Find the probability that exactly one die has a six.

Problem 5. 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) Find the event, and find the cardinality of the event.

(c) Find the probability of the event.