

Homework 3

Do the following problems. Make sure to show your explanation. The odd-numbered problems have the answer key in the back of the book.

Problem 37 of 1.3: Suppose your professor wants you to choose 5 exercises from an exercise set containing 55 exercises. In how many ways can you do this?

Problem 43 of 1.3:

- (a) How many 7-tuples are there whose entries are either H or T?
- (b) How many of these 7-tuples have exactly three H's ?

Problem 47 of 1.3: A married couple decides to have a party. The husband has 8 friends, and the wife has 9 friends. Unfortunately, none of the husband's friends will attend a party that is attended by any of his wife's friends. How many different parties of size 4 can the couple have?

Problem 48 of 1.3: A certain club consists of 5 men and 6 women.

- (a) How many ways are there to form a committee of 3 people?
- (b) How many ways are there to form a committee consisting of 3 men and 4 women?

Problem 2 of 2.1: A card is drawn at random from a deck of 52 cards.

- (a) Find the probability of drawing a face card. (A face card is a king, queen, or jack.)
- (b) Find the probability of drawing either a king or a queen.
- (c) Find the probability of drawing either a red card with face value at least 10 or a black card with face value at most 6.

Problem 3 of 2.1: A single fair die is rolled.

- (a) Find the probability of obtaining a 6.
- (b) Find the probability of obtaining a number greater than or equal to 4.
- (c) Find the probability of obtaining a number greater than 4 or less than 2.

Problem 4 of 2.1: A pair of fair dice is rolled.

- (a) Find the probability that the sum is equal to 5.
- (b) Find the probability that the sum is equal to 11.
- (c) Find the probability that the sum is at most 4.