

Mathematics 132
Instructor: P. Orlik

Name: _____

April 16, 2003

EXAM 2

Problem 1 Mary has 3 nickels, 2 dimes and 4 quarters in her pocket. She pulls out two coins. What is the probability that she got at most 20 cents?

Problem 2 Two cards are drawn from a standard deck of 52 cards. What is the probability that we get two red cards or two jacks?

Problem 3 Five letters are placed in three mailboxes. What is the probability that no box is left empty?

Problem 4 Suppose you roll two fair six sided dice and the sum is 7. What is the probability that you have a six and a one?

Problem 5 All 180 students in a class took math and history. Of these, 15 failed history only, 10 failed math only and 5 failed both.

a) Draw a Venn diagram of this situation.

b) Find the probability that a student chosen at random from this class passed both courses.

Problem 6 There are 1000 students in a school, 400 are boys. Before a Friday dance, Sally interviewed 30 boys and 30 girls about their intentions. Of these, 15 boys and 20 girls were planning to attend and 15 boys and 10 girls were not. Based on this survey:

a) How many girls would you expect at the dance?

b) How many students will not attend the dance?

Problem 7 a) We roll two fair six sided dice. List all possible outcomes for the sum of the faces.

b) Draw a diagram with the sum of the faces on the horizontal axis and the corresponding probability on the vertical axis.

Problem 8 Ann, Bob, and Carol are among eight finalists eligible for one of three equal awards. We assume that all eight have the same chance of winning an award and each student is eligible for at most one award. What is the probability that either Ann or Bob wins an award (or both)?

Problem 9 A bowl contains six red and three white marbles. Three marbles are drawn (without replacement). Let W denote the number of white marbles among the three drawn. Find the probabilities for $W = 0$, $W = 1$, $W = 2$, and $W = 3$.

Problem 10 A bowl contains six red balls and three white balls. Consider the following game. Draw two balls from the bowl. If both are white the player gets \$5. If one is red and one is white, the player gets \$1. If both are red, the player must pay \$2. What is the expected value of this game?