

Math 113 Group Problems for Friday, Week 10

PROBLEM 1.

- (a) Roll a pair of dice twelve times. If you don't have dice immediately on hand, you can go to <https://www.random.org/dice/?num=2>. Record the first roll on which you roll doubles and also the total number of doubles that you roll and report these numbers to the instructor.
- (b) What is the expected number of doubles in twelve rolls?
- (c) How long should it take to roll doubles?

PROBLEM 2.

- (a) An airline has sold 205 tickets for a flight that can hold 200 passengers. Each ticketed person, independently, has a 5% chance of not showing up for the flight. What is the probability that more than 200 people will show up for the flight?
- (b) If the same airline consistently oversells the flight from part (a) at the same rate, how many flights until we expect more ticketed passengers to show up than there are seats.

PROBLEM 3.

Start with \$2. Flip a fair coin. If it comes up head, you win a dollar, and if it comes up tails, you lose a dollar. Stop when you either have no money left or you reach \$3.

- (a) What is the probability of reaching \$3?
- (b) What is the expected total number of flips?
- (c) What is the answer to these questions if you start with \$1, instead?