

HOMEWORK 6
STA320.01, Probability
Fall Semester, 2013

Due: Thurs Oct 31st 2013

- 1** A card is drawn at random from a deck consisting of cards numbered 2 through 10. A player wins 1 dollar if the number on the card is odd and loses 1 dollar if the number is even. What is the expected value of his winnings?
- 2** A card is drawn at random from a deck of playing cards. If it is red, the player wins 1 dollar; if it is black, the player loses 2 dollars. Find the expected value of the game.
- 3** In a class there are 20 students: 3 are 5' 6", 5 are 5' 8", 4 are 5' 10", 4 are 6', and 4 are 6' 2". A student is chosen at random. What is the student's expected height?
- 4** In Las Vegas the roulette wheel has a 0 and a 00 and then the numbers 1 to 36 marked on equal slots; the wheel is spun and a ball stops randomly in one slot. When a player bets 1 dollar on a number, he receives 36 dollars if the ball stops on this number, for a net gain of 35 dollars; otherwise, he loses his dollar bet. Find the expected value for his winnings.
- 5** A die is rolled twice. Let X denote the sum of the two numbers that turn up, and Y the difference of the numbers (specifically, the number on the first roll minus the number on the second). Show that $\mathbb{E}(XY) = \mathbb{E}(X)\mathbb{E}(Y)$. Are X and Y independent?