

CS 2022/ MA 2201 Discrete Mathematics
A term 2015

(Last) Homework 5, due Monday, October 12

READING: Chapters 6, 7, 9 and 10.

1. Exercise 28 on page 451. (15 points)
2. In an experiment you pick at random a bit string of length 5. Consider the following events: E_1 : the bit string chosen begins with 1, E_2 : the bit string chosen ends with 1, E_3 : the bit string chosen has exactly three 1s.
 - (a) Find $p(E_1|E_3)$.
 - (b) Find $p(E_3|E_2)$.
 - (c) Find $p(E_2|E_3)$.
 - (d) Find $p(E_3|E_1 \cap E_2)$.
 - (e) Determine whether E_1 and E_2 are independent.
 - (f) Determine whether E_2 and E_3 are independent.(20 points)
3. Exercise 34 on page 468. (20 points)
4. A *dodecahedral die* has 12 faces that are numbered 1 through 12. Suppose that a pair of fair dodecahedral dice is rolled.
 - (a) What is the expected value of the sum of the numbers that come up?
 - (b) What is the variance of the sum of the numbers that come up?(15 points)
5. What is the variance and standard deviation of the number of times a 6 appears when a fair die is rolled 20 times? (15 points)
6. Exercise 6.a-d) on page 581. (15 points)