

Study Guide for Exam #2

To prepare for the exam make sure you know how to solve problems in this study guide and the ones we discussed in the class. Also note that questions on the exam may not be identical to the ones we solved in class or in the study guide.

From the **online book**:

- 1) Probability, Odds and Raffles (chapters 11.1, 11.2, 11.3)
- 2) Exercise starting on page 263: Ex 11.9.1, 11.9.9,
- 3) State Lotteries, 11.4 on pg 257
- 4) The house advantage: What is the house advantage of state lotteries? How would you calculate the house advantage for the Raffle problem on page 257?
- 5) Insurance. Use the table we had in class to calculate fair price for a car insurance premium. The table is on my website.
- 6) Independent events 12.1. Exercises start on page 279: Ex 12.7.1, 12.7.2, 12.7.7, 12.7.12, 12.7.20
- 7) Coin flips – Pascal’s triangle. See the handout.
 - a. What is the probability of passing (getting at least 60%) a true/false test with 10 questions if you select the answers randomly?
 - b. What is the probability of getting a 100% on a true/false test with 10 questions if you select the answers randomly?

Chapters from the “regular” textbook (Excursions in Modern Mathematics.)

- 1) Chapter 16.1: Sample Spaces and Events. All examples that deal with tossing coins or rolling dice.
- 2) 16.2: The Multiplication rule. All examples that deal with ice cream and wardrobe.
- 3) 16.3: Probabilities and Odds. All examples that deal with rolling dice. Probabilities with “AND” and “OR”.
- 4) 16.4: Expectations. 16.5. Measuring Risk.
 - a. Guessing answers in the SAT.
 - b. Use expectations to calculate fair price of a raffle ticket we solved in class.
 - c. Finding fair insurance premium for life insurance.
- 5) Exercises: #20 (nine people lining up), #21 (8 books on a shelf), #27 (board of directors), #28 (10 athletes), #39 (honest coin tossed 3 times), #40 (true/false test), #41 (two dice), #42 (cards), #43 (coin tossed 10 times), #45 (true/false test with penalty), #46 (girls and boys),
- 6) Exercises for Expectations and Measuring risk: #61 (\$ bills in the box), #62 (basketball), #63 (fair coin tossed 3 times), #64 (a pair of honest dice), #62 #68 (rolling a single die odd numbers – you win, even numbers, you have to pay)