

MATH 21-01 (Introductory Statistics), HW 8 (100 points). Due: 10/28/2016 in class.

Not from textbook (40 pts)

Read up material on probability distributions in R. Specifically, see the book Using R for Statistics by Sarah Stowell (Chapter Probability Distributions in R), available on the Tufts library website (electronic access):

<http://proquest.safaribooksonline.com.ezproxy.library.tufts.edu/book/programming/r/9781484201398>.

See also, the website:

<http://www.r-tutor.com/elementary-statistics/probability-distributions>.

Evaluate the following probabilities using R. Supply the R code you used and explain the reasoning for the command you are using and the explanation of arguments passed to each command.

- (A) Suppose that a fair die is rolled 100 times. What is the probability of throwing exactly twenty fives?
- (B) Suppose the height of men in Wisconsin is known to be normally distributed with a mean of 175 centimeters and a standard deviation of 12 centimeters. If you were to select a man from the Wisconsin population at random, what is the probability that he would be more than 180 cm? Less than 160 cm?
- (C) If you were to roll a fair die 200 times, what is the probability of rolling a six no more than 10 times? More than 45 times?
- (D) Malfunctions in a laptop computer brand are known to follow an exponential distribution with a mean time of 36 months until the device malfunctions. What is the probability that a randomly selected device will malfunction within the first 12 months?
- (E) Suppose there are ten multiple choice questions on a Stats exam. Each question has four possible answers, and only one of them is correct. Find the probability of having six or less correct answers if a student attempts to answer every question at random.

From textbook (60 pts)

- Section 5-5: 12, 15
- Section 6-2: 2, 3, 4, 8, 11, 12, 22, 29, 33
- Section 6-3: 2, 7, 10, 14