

Homework 8, Due Wednesday, March 5, 2008

Problem 1:

Section 5.5, Problem 10 a, c, e. (5th edition: section 4.5, Problem 10 a, c, e.)

Problem 2:

Section 5.5, Problem 30. (5th edition: section 4.5, Problem 30.)

Problem 3:

Section 6.1 Problems 8, 12, 16. (5th edition: section 5.1, Problems 8, 12, 16.)

Problem 4:

Section 6.2 Problem 10 a, b, c. (5th edition: Problem 10 a, b, c.)

Problem 5:

Section 6.2 Problem 12. (5th edition: Problem 12.)

Problem 6:

Section 6.2 Problem 24. (5th edition: Problem 24.)

Problem 7:

Section 6.2 Problem 26. (5th edition: Problem 26.)

Problem 8:

(Section 6.3, problem 6.) When a test for steroids is given to soccer players, 98% of the players taking steroids test positive and 0.5% of the players not taking steroids test positive. Suppose that 5% of soccer players take steroids. What is the probability that a soccer player who tests positive takes steroids?

Problem 9:

(Section 6.3, problem 8) Suppose that one person in 10,000 people has a rare genetic disease. There is an excellent test for the disease: 99.9% of people with the disease test positive and only 0.02% who do not have the disease test positive.

- a) What is the probability that someone who tests positive has the genetic disease?
- b) What is the probability that someone who tests negative does not have the disease?

Extra Credit 10:

The 120 seats of an airline flight were completely booked, with each of the 120 passengers having a different assigned seat. The passengers entered the plane one-by-one. Unfortunately, the first passenger couldn't read his boarding pass and sat in a (uniformly) random seat. Each subsequent passenger sat in their assigned seat if it was available when they entered and sat in a (uniformly) random empty seat otherwise. What is the probability that the last passenger sat in their assigned seat? (*Caution: not easy.*)