CS 206 - Introduction to Discrete Structures II

November 16, 2016

Homework: 7	Instructor: Morteza Monemizadeh
Due Date: Wednesday, November 23 (1:20 pm)	TA: Hareesh Ravi

Assignment 1:

If X is a normal random variable with parameters $\mu = 10$ and $\sigma^2 = 36$, compute

1. $\Pr[X > 5]$

2. $\Pr[4 < X < 16]$

3. $\Pr[X > 16]$

Assignment 2:

Each item produced by a certain manufacturer is, independently, of acceptable quality with probability .95. Approximate the probability that at most 10 of the next 150 items produced are unacceptable. [Hint: Use Limit Theorem (The Normal Approximation to the Binomial Distribution)]

Assignment 3:

Twelve percent of the population is left handed. Approximate the probability that there are at least 20 left-handers in a school of 200 students. [Hint: Use Limit Theorem (The Normal Approximation to the Binomial Distribution)]

Assignment 4:

Each throw of an unfair die lands on each of the odd numbers $1, 3, 5$ with probability C and on each of the even numbers with probability $2C$.

1. Find C.

2. Suppose that the die is tossed. Let X equal 1 if the result is an even number, and let it be 0 otherwise. Also, let Y equal 1 if the result is a number greater than three and let it be 0 otherwise. Find the joint probability mass function of X and Y. Suppose now that 12 independent tosses of the die are made.

3. Find the probability that each of the six outcomes occurs exactly twice.

4. Find the probability that 4 of the outcomes are either one or two, 4 are either three or four, and 4 are either ?ve or six.

5. Find the probability that at least 8 of the tosses land on even numbers.

Assignment 5:

A television store owner figures that 45 percent of the customers entering his store will purchase an ordinary television set, 15 percent will purchase a plasma television set, and 40 percent will just be browsing. If 5 customers enter his store on a given day, what is the probability that he will sell exactly 2 ordinary sets and 1 plasma set on that day?