Midterm Exam #3-Math 032-F '07
Instructor: Devin Greene

The exam is 50 minutes long. No notes are permitted, but calculators are.
Show your work.

Problem	Score out of 10
1	
2	
3	
4	
5	
Total	

Problem #1

Fifty tickets labeled 1 through 50 are placed in a bowl. Twenty-five tickets are drawn at random without replacement.

a) What is the probability that tickets 1, 2, and 3 are among the 25 tickets drawn?

b) Find the expected number of consecutive triples (like 1,2,and 3 or 5,6, and 7, etc.) among the 25 tickets drawn.

Problem #2

A fair die is rolled 12 times.

a) Find the expected number of 6's rolled.
b) Find the variance of the number of 6's rolled.

Problem #3

A rare disease randomly afflicts an average of 3 Americans per year. Approximate the probability that next year the number afflicted will be 0.

Problem #4

In poker, a *flush* occurs when all five cards belong to the same suit. Find the probability of drawing a flush from a shuffled 52-card deck.

Problem #5

A coin expert's collection consists of round coins coming from a variety of places and times. It happens to be the case that the diameter of the coins in his collection is uniformly distributed between 5mm and 30mm. If a coin is chosen at random, what is the expected value of the *area* of one of its faces?