Homework 5

Ma 623 Stochastic Processes

due Tuesday March 21 2006

From Ross "Stochastic Processes" 2nd ed. do the following:
page *155* exercises *3.11, 3.13, 3.14, 3.15,3.18*

In addition do the following problems:

(I) A fair six sided die has sides: $10, 15, 25, 40, 45, 75$. Let S_n be the sum of the first n rolls and $N(t)$ the number of times the die was rolled before reaching the total t.

Calculate:

(a) $\mathbf{P}(S_n = 2,678,495 \text{ for some } n)$

(b) The 95^{th} percentile of $N(2,678,495)$

(II) Using computer software construct a way to simulate the "way to freedom" process in 3.11, and using this simulation approximate the expected time it takes to become free (part (b) in the problem).