PHGN-341 Homework Set 2

Due Mon. 1/30/06

HW Problem. Schroeder problem 1.39, p. 27. [Assigned Wed. 1/18/05]

HW Problem. Schroeder problem 1.45, p. 31. [Assigned Wed. 1/18/05]

HW Problem. Schroeder problem 1.46, p. 32. [Assigned Mon. 1/18/05]

HW Problem. Schroeder problem 1.50, pp. 35–36. [Assigned Mon. 1/18/05]

HW Problem. Throw three fair 6-sided dice. What is the probability that at least one will show 6? Do this calculation in two ways:

    a. Make use of the probability that a given die will show 6.

    b. Make use of the probability that all three dice will *not* show 6.

Your answers should agree. [Assigned Mon. 1/23/05]

HW Problem.

    a. Find the probability of n heads in a simultaneous toss of N coins.

    b. Which value of n is most probable.

    c. Now consider the probability $P(x)$ of the fraction of heads $x = n/N$. Let $P_{\max}$ denote the probability of the most probable value of n for any given N. For $N = 6$, 40, and 200 plot (all on the same graph) the ratio $P(x)/P_{\max}$, for x ranging from 0 to 1. What can you conclude from comparison of the three plots?

[Assigned Mon. 1/23/05]

HW Problem. A dinner is to be held at Hogwarts, and the following 13 students are to sit at the same table, a round table at which 15 chairs are placed:

Harry (Potter)	Hermione (Granger)	Ron (Weasley)
Ginny (Weasley)	Draco (Malfoy)	Vincent (Crabbe)
Gregory (Goyle)	Theodore (Nott)	Orla (Quirke)
Luna (Lovegood)	Michael (Corner)	Ernie (Macmillan)
Oliver (Wood)		

Two seats will remain empty. What is the probability that the students will sit in an arrangement such that their (first) initials spell out the word "Voldemort" clockwise as seen from above? Treat all arrangements that are identical apart from a rotation as equivalent. [Assigned Mon. 1/23/05]