

**Due date:** Thursday, Sept. 20

**Deadline:** Tuesday, Sept. 25

S means a problem in Schroeder's text.

1. S 2.3 Probabilities of 2-state system: flipping 50 coins. It is probably easiest to use Excel for part g; in fact, you can use it for the whole problem, printing out for each value of the number of heads, the multiplicity and the probability, and then circling the values requested in the problem.
2. S 2.8 a-d Two small Einstein solids
3. S 2.24 Multiplicity of a large 2-state paramagnet, analogous to work on Einstein solids.
4. S 2.26 Multiplicity and entropy of ideal gas in flatland. You do not need to rewrite the whole derivation; just point out how each term in Eq. 2.40 changes when one goes from 3D to 2D.  
S 2.32 Find the entropy of your result in S 2.26, applying Stirling's approximation explicitly.
5. S 2.37. Mixing of non-equal quantities of gases. The initial volumes of the 2 gases are proportional to their number. They should be imagined as ideal gases having the same pressure. Thus, for example, the  $xN_B$  molecules expand to fill a volume that is greater by a factor  $1/x$ .

I provided the answers to S 2.30 in class