

Due date: Thursday, Feb. 15 **Deadline:** Tuesday, Feb. 20

S means a problem in Schroeder's text; GT means a problem in Gould & Tobochnik.

1. S 2.24

2. S 2.26

3. S 30a,b

4. S 2.32

5. S 2.37. The initial volumes of the 2 gases is proportional to their number. They should be imagined as ideal gases having the same pressure. Thus, for example, the B molecules expand to fill a volume that is greater by a factor $1/x$.

6. S 3.1

7. S 3.5

8. GT 3.75 (old version), 3.77 (January version)

Consider a two-dimensional "castle wall" constructed from N squares as shown in Figure 3.8 (older) or 3.10 (newer). The base row of the cluster must be continuous, but higher rows can have gaps. Each column must be continuous and self-supporting. Determine the total number W_N of different N site clusters, that is, the number of possible arrangements of N squares consistent with the above rules. Assume that the squares are identical.