MAT 344

Challenge Set #2

The following is a selection of problems that you will find useful to test your understanding of the enumeration concepts we have been studying. There are more in the text that are also worthwhile, and you are encouraged to select additional ones for yourself.

1. Find the number of ways to put 10 indistinguishable balls into 3 distinct boxes if the first box must have at least 2 balls, the second at least 1 ball and the third at least 3 balls.

2. How many mxn matrices are there each of whose entries are either 0 or 1?

3. Suppose that we have 10 different pairs of shoes. From the 20 shoes 4 are chosen at random. Find the probability of getting at least 1 pair.

4. Suppose that 6 individuals have accidents. How many different ways are there for 2 of them to have an accident on Monday, 2 on Wednesday and 2 on Friday? How many ways are there for the accidents to be distributed into 3 days, 2 accidents per day?

5. How many distinct ways are there to seat 10 people around a circular table?

6. Tucker, p.221, #9(a); p.222, #14(c),(f) and 15

7. Tucker, p.176, #6,10,13,20,35

8. Tucker, p.189, #12,22,33

10. Tucker, p.201, #3,5,13,15

11. Tucker, p.208, #1,5,7,10,11,12,15,16,17,18,20,30,32,35