**Last name** _____

**First name** _____

## LARSON—MATH 350—HOMEWORK WORKSHEET 01

1. $C_n$ is the $n^{th}$ *Catalan number*. Let $C_0 = 1$ and $C_1 = 1$. Find $C_2$, $C_3$, and $C_4$ by hand (without using our formula).

2. What is the formula we found for $C_n$?

3. Use this formula to re-calculate (and confirm) your values for $C_2$, $C_3$, and $C_4$.

4. There are 5 entree choices and 4 desert choices at a restaurant. How many ways are there to choose an entree and a desert? Explain.

5. There are 7 guests at a birthday party. Each shakes the hand of every other (exactly once). How many handshakes occur? Explain.

6. Alice sits at a fixed spot of a round table. There are 6 other chairs around the table. How many ways are there to seat the 6 other guests? Explain.

7. How many ways are there to seat the 7 people if Alice's spot isn't fixed? Explain.

8. A lottery ticket consists of a choice of 4 different numbers from 50 possible numbers. How many different choices are possible? Explain.