Last name _____

First name _____

LARSON—MATH 356—CLASSROOM WORKSHEET 12
Counting & Graphs

Review

- (**Notation**)What is $[n]$?

- (**Notation**) If S is a set, what is $|S|$? What is $|[n]|$?

- What is the *binomial coefficient* $\binom{n}{k}$?

- Why does $\binom{n}{k} = \binom{n}{n-k}$?

- How many subsets does an n-element set have?

1. What is *Pascal's Triangle*?

2. Why does $\sum_{k=0}^{n} \binom{n}{k} = 2^n$?

3. What is the *binomial theorem*?

Graphs

4. What is the *degree* $\rho(v)$ of a vertex v?

5. Why does $\sum_{v \in V(G)} \rho(v) = |E(G)|$?

6. Why does every graph have an even number of vertices with odd degree?

7. What is a *path* in a graph? What is a *connected graph*?

8. What is a *subgraph* of a graph?

9. What is an *induced subgraph* of a graph?

10. What is a *Hamiltonian circuit* in a graph?