Last name _____

First name _____

LARSON—MATH 350—CLASSROOM WORKSHEET 13
Pascal's Triangle!

Review

- What is the *Binomial Theorem*?

1. Expand $(x + y)^5$ (without actually multiplying).

2. Expand $(1 + (-1))^{10}$ using the binomial theorem—do not evaluate the binomial co-efficients, but otherwise simplify. What can you conclude?

3. Expand $(1 + 1)^{10}$ using the binomial theorem—do not evaluate the binomial coefficients, but otherwise simplify. What can you conclude?

Pascal's Triangle

4. Draw 9 layers of Pascal's Triangle. Next to it, draw a second triangle with the values of the coefficients from Pascal's Triangle.

5. Find the sum of the squares of the numbers in the first few layers.

6. What do you notice?

7. Can you formalize your observation as a conjecture (true for all layers)?

8. Can you prove it?