Last name _____

First name _____

LARSON—MATH 350—CLASSROOM WORKSHEET 25
Geometry and Combinatorics

Review

- What does it mean for integers a and b to be *relatively prime*?

- We are given n numbers from the set $\{1, 2, ..., 2n - 1\}$. Prove that we can always find two numbers among these n numbers that are relatively prime to each other.

- How many numbers are there up to 1200 that are relatively prime to 1200?

New

1. What does it mean for a figure to be *convex*?

2. Draw a convex quadrilateral. How many points of intersection do the diagonals have (inside the figure)?

3. Draw a convex pentagon. How many points of intersection do the diagonals have (inside the figure)?

4. Draw a convex hexagon. How many points of intersection do the diagonals have (inside the figure, assuming no 3 diagonals meet in the same point)?

5. Draw a convex 7-gon. How many points of intersection do the diagonals have (inside the figure, assuming no 3 diagonals meet in the same point)?

6. How many points of intersection do the diagonals of a convex n-gon have (inside the figure, assuming no 3 diagonals meet in the same point)?

Can we make a conjecture?

Can we prove it?