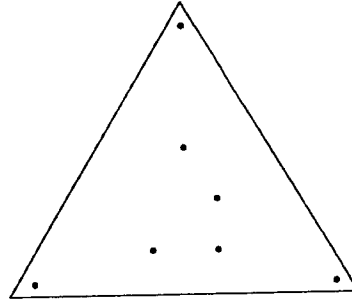The Math Circle at Canisius,
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**A Game of Criss-Cross:**
**some questions to investigate.**

Introduction: A Criss-Cross game board is created by drawing a point at each corner of a large polygon, along with two to seven additional points anywhere in its interior. Players alternate turns drawing a single straight line segment joining any two points, as long as the segment does not pass through any other points or segments already appearing on the game board. The winner is the last player able to make a legal move.

1. How many different moves can the first player make on the game board?

2. Will the first or second player win on the game board?

3. Does every game on the board last for the same number of moves? Why?

4. Relate the number of regions created to the total number of moves? Why?

5. Play some games with game boards with more points inside. Conjectures?

6. Can you predict the number of moves and regions for a game board with 99 points?
Will the first or second player win this game?