

# Dots and Boxes: a Game of Double-Crosses

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## Warm-up game: Who Wins?

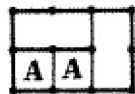
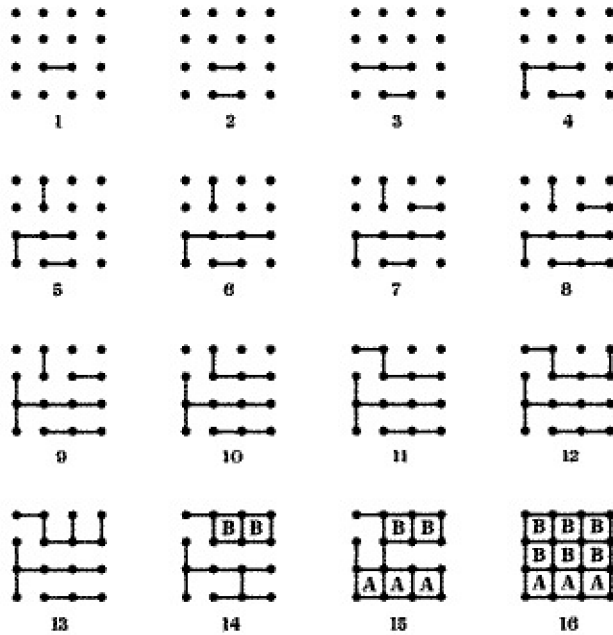
1. Draw four points on a circle. Take turns connecting points, but no lines should ever cross. If you can't move, you lose!

Question: do you want to go first or second?

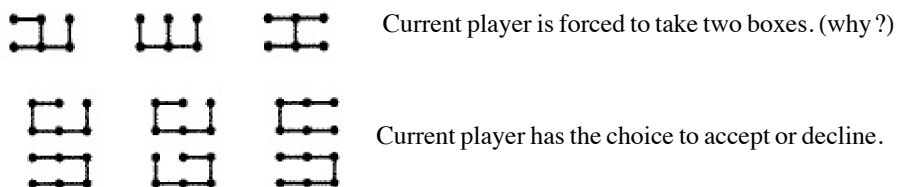
2. Repeat the dots-on-a-circle game with five points. Now who wins?  
Repeat with six points.

## The Dots-and-Boxes Game

A complete game summarized. How could player A have won?

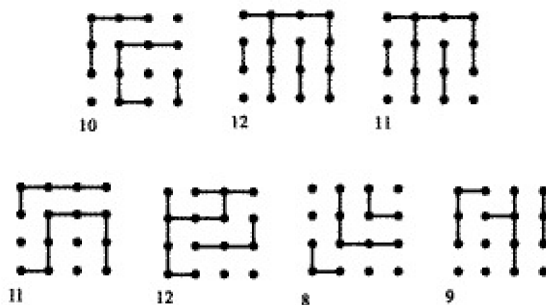


A loop counts as an even number of long chains; declining it is a twin double-cross and gives your opponent four boxes.



**Problems**

How can you guarantee the "correct" number of long chains, and thereby win?



**Sources**

*The Dots and Boxes Game: Sophisticated Child's Play* by Elwyn Berlekamp (A K Peters/CRC Press (July 18, 2000))

3x3 game of Dots and Boxes can be found here: <http://tinyurl.com/233brxg>

Full version of Dots and Boxes: <http://www.math.ucla.edu/~tom/Games/dots&boxes.html>