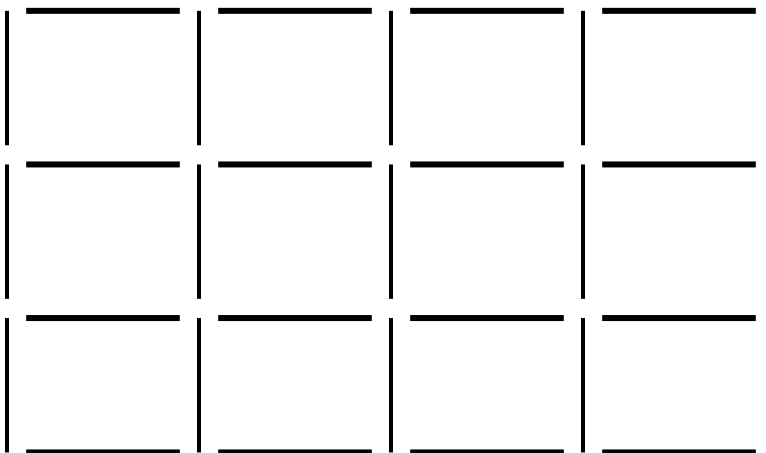


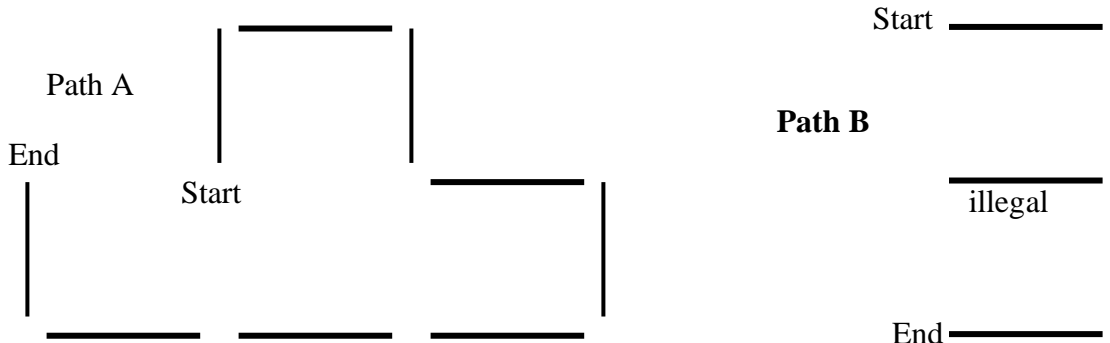
Game Show

Level C

The game show *Pick Up Coins* is getting top ratings, so the rival network has begun a new show called *Pick Up Sticks*. The game starts with an arrangement of 31 sticks in a 3-by-4 rectangular-shaped grid as shown below:



The game is played by two players who alternate taking turns. A turn consists of picking up sticks along a path. During any one turn, a player may start wherever she or he likes, picking up as many sticks as he or she wishes as long as the sticks follow a path. A path is a sequence of adjacent sticks, starting at one end of the stick, leading to a stick at the opposite end, and so on. For example, Path A is legal and Path B is illegal because the path has been retraced.



The winner is the player who picks up the **last stick!**

Determine a strategy for playing this game. Should you start first or second? Explain a method for ensuring you win.

