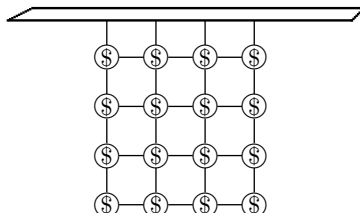
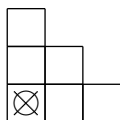


- Two players play the following game on a round table top of radius R . Players take turns placing pennies (of unit radius) on the tabletop, but no penny is allowed to touch another. Which of the two players has a winning strategy as a function of R ? Prove your answer by exhibiting the winning strategy.
- A bunch of coins is dangling from the ceiling. The coins are tied to one-another and to the ceiling by strings as pictured below. Players alternately cut strings, and a player whose cut causes any coins to drop to the ground loses. If both players play well, who wins? Prove your answer.



- The game of *Brussel Sprouts* starts with a number of 4-armed crosses on a piece of paper. A move is to draw a line from one arm to another arm. The line must not cross any other line or any cross. Once the line is drawn, 2 arms are drawn on the line, one on each side of the line. Determine who wins as a function of n , the number of initial crosses, and prove your answer. (Hint: how many moves does the game last?)
- Determine some of the \mathcal{P} -positions in 2-dimensional chomp. In particular, determine **all** the \mathcal{P} -positions for width 1 and width 2 boards, and find at least two \mathcal{P} -positions for boards that include the following 6 squares:



- Play several games of dots and boxes with a classmate or with a friend until you feel comfortable with the parity of the number of long chains. Now, play a *serious* game where you try to win and record the game, and submit the game record.