You’re playing for the International Championship in “Rock, Paper, Scissors”. Each round you win, you get paid $1. If you lose a round you forfeit $1. If you tie, you get nothing. Each of the players you face has the same reward/punishment payoffs. Your objective is to choose a strategy that allows you to win the most money. You don’t know what your opponent is going to do, only they you have to put down the right strategy.

1. (1 pt.) If she plays “Rock”, your Best Response is: Rock Paper Scissors
   1. (1 pt.) If you play Rock:
      1. Your payoff is: 1 0 -1
      2. Your opponents payoff is: 1 0 -1
   2. (1 pt.) If you play Paper:
      1. Your payoff is: 1 0 -1
      2. Your opponents payoff is: 1 0 -1
   3. (1 pt.) If you play Scissors:
      1. Your payoff is: 1 0 -1
      2. Your opponents payoff is: 1 0 -1
2. (1 pt.) If she plays “Paper”, your Best Response is: Rock Paper Scissors
   1. (1 pt.) If you play Rock:
      1. Your payoff is: 1 0 -1
      2. Your opponents payoff is: 1 0 -1
   2. (1 pt.) If you play Paper:
      1. Your payoff is: 1 0 -1
      2. Your opponents payoff is: 1 0 -1
   3. (1 pt.) If you play Scissors:
      1. Your payoff is: 1 0 -1
      2. Your opponents payoff is: 1 0 -1
3. (1 pt.) If she plays “Scissors”, your Best Response is: Rock Paper Scissors
   1. (1 pt.) If you play Rock:
      1. Your payoff is: 1 0 -1
      2. Your opponents payoff is: 1 0 -1
   2. (1 pt.) If you play Paper:
      1. Your payoff is: 1 0 -1
      2. Your opponents payoff is: 1 0 -1
   3. (1 pt.) If you play Scissors:
      1. Your payoff is: 1 0 -1
      2. Your opponents payoff is: 1 0 -1
4. (9 pts.) To organize your choices, you can create a matrix of strategies (Rock, Paper, Scissors) and payoffs. This will allow you to visualize your Best Responses. Complete the matrix below by completing the Payoffs for each person. The first listed payoff in each box is yours, the second listed is for your opponent.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Opponent | | |
|  |  | Rock | Paper | Scissors |
| You | Rock | 0,0 | -1, 1 | 1, -1 |
| Paper | 1,-1 | 0, 0 | -1,1 |
| Scissors | -1, 1 | 1,-1 | 0, 0 |

1. (6 pts.) An equilibrium is a situation where each player strategy played is a best response to the strategy played by the other player. What is(are) the equilibrium strategies and payoffs in “Rock, Paper, Scissors”? Explain.

The equilibrium points for Rock paper scissors should always have a payoff of 1, -1. For example, if player one picks Rock players two’s best option is to pick paper and vice versa. This works out for every combination of choices since players are going for the win rather than a tie.

Player 1 picks R; Player 2’s best pick is P

Player 1 picks P; Player 2’s best pick is S

Player 1 picks S; Player 2’s best pick is R

And vice versa for player 2 picking first

1. (4 pts.) In the very first round of the opening play, what is the best strategy for you to play? Explain.

Pick a action, for example Paper and then stick with it for every round. We are more likely to tie or win than we are to lose every round we play the game. This isn’t the best strategy for multiple games against one person but in rapid fire rounds against multiple people or single rounds we are more likely to win overall.