Consider the following game. I have two coins, one is $1, the other is $10. I will secretly pick one, and give you a chance to guess. If you guess correctly, then you get the money.

1. Write down a 2\*2 matrix with entry (i,j) containing a pair (-aij, bij), such that aij is the amount I lose and bij is the amount you gain.

2. Find a mixed Nash equilibrium:
 I give $1 with probability \_\_\_\_\_\_\_\_\_\_\_\_\_,
 You guess $1 with probability \_\_\_\_\_\_\_\_\_\_\_\_\_.

3. Prove that it is a Nash equilibrium.