

test 3

Instructions:

1. Answer all of the following questions on the answer sheets provided. You can write on this list of questions, but credit will be awarded only for answers written on answer sheets.
2. Do not access any book, notebook, newspaper, calculator, computer, cell phone, or other possible source of inappropriate aid during the test, do not leave the room before you are finished taking the test, and be sure to finish the test within this 50-minute testing period. No credit will be given for any work done after you access any possible source of inappropriate aid, after you leave the room for any reason, or after the end of the testing period.
3. When you are finished, be sure your name is written on each of your answer sheets, and turn them in. Also, turn in this list of questions.

Questions:

For questions 1 and 2, assume the following:

Kieran can choose either $x = 4$ or $x = 11$. Then Rae, not knowing Kieran's choice, can choose $y = 5$ or $y = 7$ or $y = 9$. If $x + y > 17$, each player gets \$0; otherwise, Kieran gets \$ x and Rae gets \$ y .

Also, when answering questions 1 and 2, when stating the outcomes, you do not have to write the players' names – you can just write ordered pairs of payoffs where the first payoff is Kieran's and the second is Rae's.

1. Draw a tree for this game.
2. Draw a matrix (or matrices, if necessary) for this game.

Special instruction:

Below, matrices containing only one number in each cell represent zero-sum games in which the number given represents the row player's payoff and the column player's payoff is the negation of that.

3. Analyze the following game using dominance considerations and state the strategy pair that results from that analysis.

	C ₁	C ₂	C ₃
R ₁	6	3	4
R ₂	7	4	5

4. Analyze the following game using dominance considerations and state the strategy pair that results from that analysis.

	C ₁	C ₂	C ₃	C ₄
R ₁	5	4	5	4
R ₂	5	6	2	9
R ₃	7	6	7	8

5. State whether the following game has any equilibrium strategy pair(s). (You can ignore mixed strategies and focus on pure strategies only.) If it does, write it (or each of them) in the form (R_x, C_y) , where x and y are integers corresponding to row and column numbers, respectively.

	C ₁	C ₂	C ₃
R ₁	5	6	7
R ₂	6	5	4

6. Imagine a two-person zero-sum game in which both players have two pure strategies – R_1 and R_2 for the row player, and C_1 and C_2 for the column player. Suppose that when the row player plays a mixed strategy of the form $(p R_1, (1 - p) R_2)$ against a mixed strategy for the column player of the form $(q C_1, (1 - q) C_2)$, the row player's expected utility is $[p \times (15q - 7)] + (8q - 3)$. What mixed strategy should the column player play, if she would like to play a mixed strategy that could (along with a correctly chosen mixed strategy for the row player) be part of an equilibrium strategy pair? (Be sure to write a mixed strategy for the column player, not just the value of a variable.)
7. What values of p and q make $(p R_1, (1 - p) R_2; q C_1, (1 - q) C_2)$ an equilibrium strategy pair for the following game? (You do not have to show your work. An answer of the form ' $p = _$, $q = _$ ' can earn full credit.)

	C ₁	C ₂
R ₁	8	5
R ₂	3	7

8. Suppose that, for some game, the row player derives the expected utility, for him, of playing the strategy $(p R_1, (1 - p) R_2)$, on the assumption that the column player is playing a certain strategy (do not worry about the details of the column player's strategy). Suppose the expected utility that the row player derives is $-3p + 7$. What is the row player's expected-utility-maximizing choice of p ? What strategy does this mean that the row player should play?
9. Write the following matrix on one of your answer sheets and circle any equilibrium outcome(s). Also state whether this game is a coordination game, a prisoner's dilemma, or neither.

	C ₁	C ₂
R ₁	17, 8	12, 9
R ₂	19, 6	15, 7

10. Write the following matrix on one of your answer sheets and circle any equilibrium outcome(s). Also state whether this game is a coordination game, a prisoner's dilemma, or neither.

	C ₁	C ₂
R ₁	18, 5	13, 4
R ₂	11, 2	16, 7

Instructions, revisited:

As stated in item 3 of the instructions, turn in this list of questions along with your answer sheets.