Feedback — In-Video Quizzes Week 1

Help Center

You submitted this quiz on **Sun 13 Jan 2013 10:47 AM PST**. You got a score of **7.00** out of **7.00**.

Question 1

1-3 Defining Games

Consider the following normal form:

- N={1, 2}
- A_i={Movie, Theater} Each player chooses an action of either going to a movie or going to the theater.
- Player 1 prefers to see a movie with Player 2 over going to the theater with Player 2.
- Player 2 prefers to go to the theater with Player 1 over seeing a movie with Player 1.
- Players get a payoff of 0 if they end up at a different place than the other player.

Player 1\ Player 2	Movie	Theater
Movie	a,b	0,0
Theater	0,0	c,d

Which restrictions should a, b, c and d satisfy?

Your Answer		Score	Explanation
a) $a > c, b > d$;			
b) $a > d, b < c$;			
c) $a > c, b < d$;	✔	1.00	

○ d) $a < c, b < d$;		
Total		1.00 / 1.00

Question Explanation

(c) is true.

- Since Player 1 prefers to seeing a movie over going to the theater, then Player 1's payoff under (Movie, Movie) has to be larger than the payoff under (Theater, Theater). Thus, $a > c$.
- Since Player 2 prefers to go to the theater over seeing a movie, then Player 2's payoff under (Theater, Theater) has to be larger than the payoff under (Movie, Movie). Thus, $b < d$.

Question 2

1-4 Examples of Games

Consider the following constant-sum game:

	H	T
H	1,-1	
T		0,?

What should be filled in ?:

Your Answer		Score	Explanation
○ a) -1;			
◉ b) 0;	✔	1.00	
○ c) 1;			

d) 2.		
Total	1.00 / 1.00	

Question Explanation

(b) is true.

- In a constant-sum game, there is a constant k such that $u_1(a_1, a_2) + u_2(a_1, a_2) = k$, for all possible (a_1, a_2).
- We know $u_1(H, H) = 1$ and $u_2(H, H) = -1$, thus $k = 1 + (-1) = 0$.
- Thus $? = u_2(T, T) = k - u_1(T, T) = 0 - 0 = 0$.

Question 3

1-6 Strategic Reasoning

n people guess an integer between 1 and 100, and the winner is the player whose guess is closest to the mean of the guesses + 1 (ties broken randomly). Which of the following is an equilibrium:

Your Answer		Score	Explanation
a) All announce 1.			
b) All announce 50.			
c) All announce 75.			
d) All announce 100.	✔	1.00	
Total		1.00 / 1.00	

Question Explanation

(d) is true.

- Each player's best response is to announce a number closest to the average + 1, subject to the constraint of the 100.
- So, each person wants to name a number above average, and so nothing is stable except all saying 100.
- They cannot announce more than 100, and that is then an equilibrium.

Question 4

1-7 Best Response and Nash Equilibrium

Consider the collective-action game:

Player 1\ Player 2	Revolt	Not
Revolt	2,2	-1,1
Not	1,-1	0,0

When player 1 plays "Not", for player 2

Your Answer		Score	Explanation
a) "Revolt" is a best response.			
b) "Not" is a best response.	✔	1.00	
c) "Revolt" and "Not" are both best responses.			
d) There is no best response.			
Total		1.00 / 1.00	

Question Explanation

(b) is true.

- When player 1 plays "Not", player 2 gets -1 from "Revolt" and 0 from "Not". Thus "Not" is a best response.
- No strategy is a dominant strategy:
  - When the other player plays "Not", it is strictly better to play "Not";
  - When the other player plays "Revolt", it is strictly better to play "Revolt";
  - No strategy always dominates the other strategy.

Question 5

1-8 Nash Equilibrium of Example Games

Consider the following game in which two firms must decide whether to open a new plant or not:

Firm 1\ Firm 2	Build	Not
Build	1,1	3,0
Not	0,3	2,2

Find all pure strategy Nash equilibrium:

Your Answer		Score	Explanation
a) Only (Build, Not).			
b) Only (Not, Not).			
c) Only (Build, Build).	✔	1.00	
d) Only (Not, Build).			
Total		1.00 / 1.00	

Question Explanation

(c) is true.

- (Build, Build) is a pure strategy Nash equilibrium:
  - When firm 1 chooses Build, firm 2 gets 1 from Build and 0 from Not, so firm 2 has no incentive to deviate from Build.
  - When firm 2 chooses Build, firm 1 gets 1 from Build and 0 from Not, so firm 1 has no incentive to deviate from Build.
- (Not, Not) is not a pure strategy Nash equilibrium:
  - When firm 1 chooses Not, firm 2 gets 3 from Build and 2 from Not. So firm 2 would gain by deviating to Build.
- Similarly, you can check that from each of the other combinations of pure strategies some player would strictly benefit from deviating.

Question 6

1-9 Dominant Strategies

Consider the game:

Player 1\ Player 2	Left	Right
Up	2,1	1,1
Down	0,1	0,2

Which of the players has a strictly dominant strategy?

Your Answer		Score	Explanation
a) Player 1.	✔	1.00	
b) Player 2.			
c) Both players.			
d) Neither player.			
Total		1.00 / 1.00	

Question Explanation

(a) is true.

- "Up" is a strictly dominant strategy for player 1 because
  - When player 2 plays Left, player 1 gets 2 from Up and 0 from Down (Up is strictly better); When player 2 plays Right, player 1 gets 1 from Up and 0 from Down (Up is strictly better).
- Player 2 does not have a strictly dominant strategy, only a very weakly dominant strategy.
  - When player 1 plays Up, player 2 gets 1 from either Left or Right (so is indifferent); When player 1 plays Down, player 2 gets 1 from Left and 2 from Right (Right is strictly better.).

Question 7

1-10 Pareto Optimality

Consider the game:

Player 1\ Player 2	Left	Right
Left	3,3	1,1
Right	1,4	1,1

Which of the following outcomes is Pareto-optimal? (There might be more than one, or none.)

Your Answer		Score	Explanation
☑ a) (3,3);	✔	0.33	
☑ b) (1,4);	✔	0.33	
☐ c) (1,1);	✔	0.33	
Total		1.00 / 1.00	

Question Explanation

(a) and (b) are Pareto-optimal.

- Checking that (a) and (b) are Pareto-optimal:
  - Neither outcome is Pareto-dominated by (1,1).
  - Also, (a) does not Pareto-dominate (b) and vice versa (in (a) one player is strictly better off and the other player is strictly worse off than in (b)).
- (c) can't be Pareto-optimal since is it Pareto-dominated by (a) and (b)
  - At least one player is strictly better off and the remaining player is at least indifferent between both outcomes.