# Feedback — In-Video Quizzes Week 2

You submitted this quiz on **Wed 16 Jan 2013 5:04 PM CET**. You got a score of **3.00** out of **3.00**.

## Question 1

**2-3 Computing Mixed Nash Equilibrium (I)**

Consider the predator/prey game with a mixed strategy:

| | | | |
|---|---|---|---|
| mixed | | p | 1-p |
| | Pred\ Prey | Active | Passive |
| q | Active | 2,-5 | 3,-6 |
| 1-q | Passive | 3,-2 | -1,0 |

What are $p$ and $q$ in a mixed-strategy equilibrium? (Hint: payoff of the predator when playing active is $2p+3(1-p)$; when playing passive is $3p-(1-p)$. Payoffs should be equal since the predator should be indifferent.)

| Your Answer | | Score | Explanation |
|---|---|---|---|
| d) 4/5; 2/3. | ✓ | 1.00 | |
| Total | | 1.00 / 1.00 | |

**Question Explanation**

(d) is true.

- For $p$, following the hint we have, $2p+3(1-p)=3p-(1-p)$, implies $p=4/5$.
- For $q$, payoff of the prey when playing active is $-5q-2(1-q)$; when playing passive it is $-6q$.
- These two payoffs should be equal: $-5q-2(1-q)=-6q$, implies $q=2/3$.

# Question 2

### 2-5 Example: Mixed Strategy Nash

Consider the penalty kick game with a very accurate kicker:

| | | | |
|---|---|---|---|
| mixed | | p | 1-p |
| | Kicker\ Goalie | Left | Right |
| q | Left | 0,1 | 1,0 |
| 1-q | Right | 1,0 | 0,1 |

What are $p$ and $q$ in a mixed-strategy equilibrium? (Hint: payoff of the kicker when playing left is $0p + (1-p)$; when playing right is $p + 0(1-p)$. Payoffs should be equal since the kicker should be indifferent.)

| Your Answer | | Score | Explanation |
|---|---|---|---|
| c) 1/2; 1/2. | ✓ | 1.00 | |
| Total | | 1.00 / 1.00 | |

**Question Explanation**

(c) is true.

- For $p$, following the hint we have, $0p + 1(1-p) = p + 0(1-p)$, implies $p = 1/2$.
- For $q$, payoff of the goalie when playing left is $q + 0(1-q)$; when playing right it is $0q + (1-q)$.
- These two payoffs should be equal: $q + 0(1-q) = 0q + (1-q)$, implies $q = 1/2$.

# Question 3

### 2-6 Data: Professional Sports and Mixed Strategies

Consider the following game:

| 1\ 2 | L | R |
|---|---|---|
| T | 2,2 | 0,2 |
| B | 1,2 | 3,3 |

Find all pure-strategy and mixed-strategy Nash equilibria:

| Your Answer | | Score | Explanation |
|---|---|---|---|
| d) All of above. | ✓ | 1.00 | |
| Total | | 1.00 / 1.00 | |

**Question Explanation**

(d) is true.

- You can verify that (T, L) and (B, R) are pure strategy Nash equilibria by showing no single player would be better off by deviating from the prescribed strategy, taking the other's as given.
- Mixed equilibrium where player 1 plays T with $prob = q$ and player 2 plays L with $prob = p$:
  - For $p$, payoff of 1 when playing T is $2p + 0(1 - p)$, and when playing B is $1p + 3(1 - p)$. These payoffs should be equal implying $p = 3/4$.
  - For $q$, you can check this in the same way yourself.
- Notice that the mixed-strategy equilibrium requires one of the players to be playing deterministically, that is, not randomizing at all.