1. Two players, 1 and 2, simultaneously chooses a positive integer up to 3, that is, $s_i \in \{1, 2, 3\}$. Let $i, j \in \{1, 2\}$ and $i \neq j$. If $s_i + s_j \leq 4$ and $s_i \neq s_j$, each player receives the numbers of dollars she names, i.e., s_i dollars. If $s_i = s_j$ or if $s_i + s_j > 4$, then each player receives 0.

   (a) Write down the strategical form of the game; (3 points)

   (b) Identify all strictly dominated and weakly dominated strategies of the players. (1 points)

   (c) Identify all NE of this game. (1 points)

   Answer: The strategic form

		Player 2		
		1	2	3
Player 1	1	(0, 0)	(1, 2)	(1,3)
	2	(2, 1)	(0, 0)	(0, 0)
	3	(3, 1)	(0, 0)	(0, 0)

   "2" is a strictly dominated strategy for player i by a mixed strategy, for example, by $\sigma_i = (\frac{1}{4}, 0, \frac{3}{4})$, $i = 1, 2$.

   There are 2 pure strategy NE, $(3, 1)$ and $(1, 3)$, and 1 mixed NE:

$$\left(\frac{1}{4}, 0, \frac{3}{4}; \frac{1}{4}, 0, \frac{3}{4}\right).$$