**PHI 169 – Critical Reasoning – Spring 2016**

**Marcello Di Bello – Lehman College, CUNY**

**Assignment #1– Due Monday Feb 8**

A course in critical reasoning is—unsurprisingly!—about reasoning. Below are a few "reasoning exercises" which I hope you'll enjoy.

## 1 Can you tell how many Italian and Irish people are there?

You are at Ellis Island in NYC at the beginning of the 20th century and lots immigrants are arriving from Europe. You are in a room with 1,000 immigrants in which:

(F1) each of the 1,000 immigrants in the room is either Irish or Italian;

(F2) at least one of the 1,000 immigrants is Irish; and

(F3) for any pair of two different immigrants taken from the 1,000 immigrants in the room, at least one of the two is Italian.

Determine how many immigrants are Italian and how many are Irish. Motivate your answer.

## 2 Is coloring and numbering the cells in the table according to the instructions at al possible?

Draw a table with 4 rows and 9 columns. Please color each cell in the table and assign a 0 or a 1 to each cell. Make sure you satisfy the three conditions below:

(C1) For any cell $c$ in a given column, there is exactly one other cell $c'$ in another column such that $c$ and $c'$ are filled with the same color. (NB: the expression 'exactly one' means 'at least one and at most one.') Whenever two cells $c$ and $c'$ are colored with the same color, we shall call them *twin cells*.

(C2) Twin cells must be assigned either both 1's or both 0's.

(C3) Each column has exactly one cell to which the number 1 is assigned (and thus each column has exactly three cells to which the number 0 is assigned).

If you think that the above coloring and numbering task cannot be done, explain why not.