PHI 169 – CRITICAL REASONING – SPRING 2015

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ASSIGNMENT #1– DUE MONDAY FEB 2

A course in critical reasoning is—unsurprisingly!—about reasoning. Below are a few "reasoning exercises" which I hope you'll enjoy. *You should do only two exercises out of the three exercises below, but you will get extra credit if you do all the three exercises.*

1 EUCLID'S PROOF OF PROPOSITION V

In class we have seen the distinction between premises and conclusion. We have also seen that the premises of a piece of reasoning can be of different types (e.g. definitions, notions taken for granted, propositions previously established). Once you have all that clear in mind, read proposition V of Book 1 of Euclid's elements. The link is on the course website. Look for "Part 1- Michael Brown " –> "W 1" –> "Euclid's Elements". After reading proposition V and the accompanying proof, write a note that contains:

(a) the statement of proposition V (in your own words);

(b) your reconstruction of the proof of proposition V, in particular, please identify

> (i) the premises that Euclid uses in the proof (i.e. axioms, definitions, postulates, propositions Euclid has proven earlier) and
> (ii) the reasoning steps leading to the conclusion, namely to proposition V itself.

Be as clear and as precise as possible.

2 COLORING AND NUMBERING

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 constraints 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.

3 ELLIS ISLAND

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.