TRADURRE IN ITALIANO IL TESTO SEGUENTE:

The Four Colour Problem

The story of the Four Colour Problem begins in October 1852 when Francis Guthrie, a young mathematician from University College London, was colouring in a map showing the counties of England. As he did so it occurred to him that the maximum number of colours required to colour any map seemed to be four. The colouring has to meet the obvious requirement that no two regions sharing a length of common boundary should be given the same colour.

What makes the four colour problem so hard is that it refers to all conceivable maps, not just all the maps in all the atlases around the world. Knowing that you can colour some particular map using four colours does not help you at all. You need to produce an argument that will work in all cases.

The Four Colour Problem can be reformulated as a question about graphs. Within each region of a given map, you place a vertex of the graph. You then join up the vertices: two vertices are joined together if and only if their respective map regions share a common boundary. The problem of colouring the map can be reformulated in terms of colouring the graph: colour the vertices of the graph in such a way that any two vertices which are connected together have different colours.

To prove the Four Colour Problem, you start out by assuming that there are graphs (derived from a map) that cannot be coloured with four colours, and work to deduce a contradiction. If such graphs do exist, we can choose one having the least number of vertices. The idea then is to show that you can find a particular vertex that can be removed without altering the number of colours needed to colour the graph. Removing it produces a new graph having one fewer vertex than the original, and we get a contradiction.

So the crux of the proof is to describe all ways in which a "removable" vertex can appear, and to show that any minimal counterexample to the Four Colour Problem must necessarily contain at least one such vertex. This is the part that turned out to require computer help. Appel and Haken had to identify and examine around 1500 different ways, and show that any minimal counterexample graph must contain at least one vertex of one of those 1500 kinds. Their computer-assisted investigation started in 1972 and four years later they had their answer. It took a total of 1200 hours of computer time!

TRADURRE IN INGLESE LE FRASI SEGUENTI:

1. Quanti colori sono necessari per colorare una cartina?
2. Il problema dei quattro colori è uno dei problemi più famosi in Matematica.
3. Un grafo con tre vertici può essere colorato con soli tre colori!
4. Per dimostrare un teorema bisogna mostrare un ragionamento che funzioni sempre.
5. Un calcolatore più moderno impiegherebbe molto meno tempo.