**PROBLEM DESCRIPTION :**

Cuts turn the cake into several pieces. Now you two want to distribute the pieces among yourself. Since, your birthday, your friend has given you a choice of choosing some pieces for yourself.

You want to eat the whole cake :p . So, but as its your bday you to want that others dont get notice about this. There's a trick which i can got for you in this case.

Trick : So instead of having all the pieces you want to select the set of pieces such that no pair of pieces have a common side.

**ALGORITHM USED :**

Maximum independent set ,Vertex cover , Bipartite matching , Max. Flow , Geometry

**Applied Things :**

Lets denote the cake as graph where each piece is a node and and two nodes will be connected if the corresponding pieces share an edge in the cake. And also denote the volume of each piece as a weight of node. Best part to minimise the problem code :

Our problem reduces to finding the set of nodes in the graph such that no two nodes are connected and the sum of weights is maximum. And this is maximum weighted independent sets which is NP - HArd problem but as we know its bipartite graph hence its easier and can be calculated in this case :P .. Hurray.... :D

Lets complement of a independent set in a graph is a vertex cover. So the complement of maximum weighted independent set in a graph will be its minimum weighted vertex cover. We can construct a new graph G' such that the the value of minimum weighted vertex cover in our graph will be same as the weight of minimum cut in G'.

Original graph is bipartite ,  We add two new vertices source and sink. for every i in R we add an edge from source to i with a weight oght of area(i). for every j in B we add an edge from j to sink with a weight of area(j). Minimum vertex cover in the original graph is same as minimum cut in G' which we can find using max flow. The answer will be (total area - obtained value for min cut).