Glove Store

John runs a glove store where he sells multi-colored gloves. Since his shop is small he does not keep the gloves there but in a warehouse nearby. He has infinite pairs of gloves of C different color varieties in his warehouse all mixed up randomly. One day, a customer arrives at his shop to buy K pairs of gloves. Unfortunately, when John enters the warehouse to get the gloves he realises that the light bulb is not working because of which he will not able to see the color of the glove he will pick. Your task is to tell John the minimum number of gloves that he should pick from the warehouse such that it will be guaranteed to have K matching pairs.

Input:
First line of input contains an integer T denoting the number of test cases
For each test case, next line contains two space separated integers K and C

Output:
For each test case on a new line, output the minimum number of gloves that John should pick from the warehouse such that the picked lot will be guaranteed to have K matching pairs

Constraints:
1<=T<=10^5
1<=K<=10^5
1<=C<=10^5

Sample Input:
1
1 3

Sample Output:
4

Explanation:
John's warehouse contains gloves of three different colors. If John picks four gloves from his warehouse, it is guaranteed that he will have one matching pair with him.