

Problem C. Number Transformation

Time limit 1000 ms

Mem limit 65536 kB

In this problem, you are given an integer number s . You can transform any integer number A to another integer number B by adding x to A . This x is an integer number which is a prime factor of A (please note that 1 and A are not being considered as a factor of A). Now, your task is to find the minimum number of transformations required to transform s to another integer number t .

Input

Input starts with an integer T (≤ 500), denoting the number of test cases.

Each case contains two integers: s ($1 \leq s \leq 100$) and t ($1 \leq t \leq 1000$).

Output

For each case, print the case number and the minimum number of transformations needed. If it's impossible, then print -1 .

Sample

Input	Output
2 6 12 6 13	Case 1: 2 Case 2: -1