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

For each test case, there will be a line with two integers, S $(1 \leq S \leq 100)$ & T $(1 \leq T \leq 1000)$, as described above. The last test case will be followed by a line with two 0's denoting end of input. This case should not be processed.

Output

For every test case except the last one, print a line of the form 'Case X: Y' where X is the serial number of output (starting from 1). Y is the minimum number of transformations required to transform S to T. If it is not possible to make T from S with the given rules, Y shall be '-1'.

Explanation of case 1:
    You can make 12 from 6 in 2 steps in this way: $6 \rightarrow 9 \rightarrow 12$.

Sample Input

```
6 12
6 13
0 0
```

Sample Output

```
Case 1: 2
Case 2: -1
```