Lexicographic position

Let us consider the set of integer numbers between 1 and N inclusive. Order them lexicographically (i. e. like in the vocabulary), for example, for N = 11 the order would be: 1, 10, 11, 2, 3, 4, 5, 6, 7, 8, 9.

Denote the position of the number K in this ordering as $Q_{N,K}$. For example, $Q_{11,2} = 4$.

Given N and K, compute $Q_{N,K}$.

Input

The first line contains a number T, which is the number of test cases. T lines follow, each contains 2 integers N and K separated by a single space.

Output

For each test case, print $Q_{N,K}$ on a single line.

Constraint

$1 \le T \le 100$

$1 \le K \le N \le 10^{100}$

Example

Input:
7
1 1
11 2
215 211
215 215
215 26
215 99
1000000000 999999999

Output:
1
4
126
130
135
215
1000000000