

Problem D. K-th Not Divisible by n

Time limit 1000 ms

Mem limit 262144 kB

You are given two positive integers n and k . Print the k -th positive integer that is not divisible by n .

For example, if $n = 3$, and $k = 7$, then all numbers that are not divisible by 3 are: 1, 2, 4, 5, 7, 8, 10, 11, 13 The 7-th number among them is 10.

Input

The first line contains an integer t ($1 \leq t \leq 1000$) — the number of test cases in the input. Next, t test cases are given, one per line.

Each test case is two positive integers n ($2 \leq n \leq 10^9$) and k ($1 \leq k \leq 10^9$).

Output

For each test case print the k -th positive integer that is not divisible by n .

Examples

Input	Output
6	10
3 7	15
4 12	1999999999
2 1000000000	113
7 97	1000000001
1000000000 1000000000	1
2 1	