Problem J
Juggling Sequence

The **Juggling Sequence** is an integer sequence with n elements, defined as follow:

- $a_1 = 1$,
- For every $i \geq 1$:
  - If $a_i \leq i$, then $a_{i+1} = a_i + i$,
  - If $a_i > i$, then $a_{i+1} = a_i - i$.

Let's sort the juggling sequence in non-decreasing order. What is the m-th number?

Input

The first line of the input contains a single integer t ($1 \leq t \leq 10^4$) — the number of test cases.

t test cases follow, each test case contains a single line with two integers n and m ($1 \leq m \leq n \leq 10^{18}$).

Output

For each test case, print a single integer — the m-th number in the sorted juggling sequence.

Explanation of the sample input

With $n = 6$, the juggling sequence is $1, 2, 4, 1, 5, 10$. After sorting, the sequence becomes $1, 1, 2, 4, 5, 10$.

Sample Input 1	Sample Output 1
3 6 1 6 2 6 6	1 1 10