

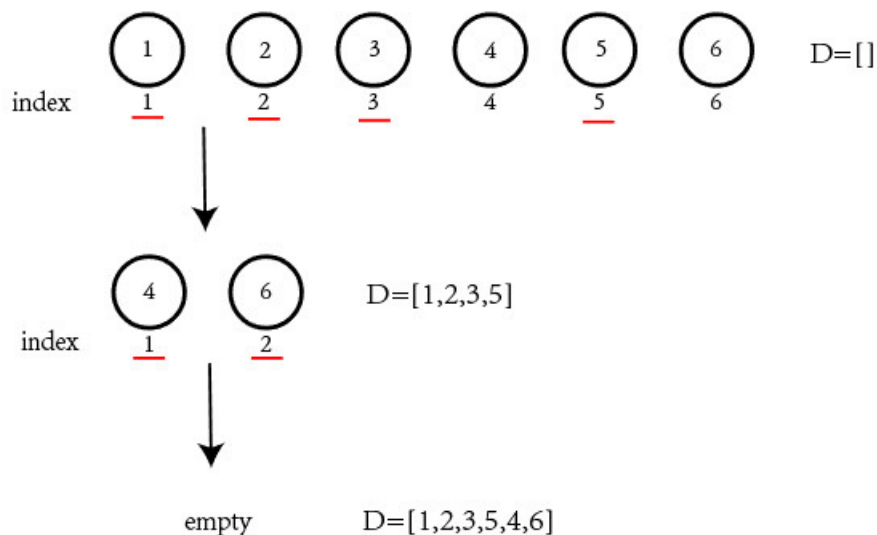
Delete Prime

Input file: **standard input**
Output file: **standard output**
Time limit: 2 seconds
Memory limit: 1024 megabytes

There are n balls lie in a line. Each ball has a number on it, and the number on the i -th ball is i ($1 \leq i \leq n$).

For each round, we choose the balls **whose index is 1 or a prime number** and kick them out from the line in order. After that, we start the next round with the remaining balls while their relative position does not change and their indices are relabeled in order from 1 (but the numbers on the balls will not change). We repeat this process until no ball is left. There is a kick-out sequence D , which is empty in the very beginning. Every time a ball is kicked out, the number on it will be appended to D .

For example, when $n = 6$ we have balls $[1, 2, 3, 4, 5, 6]$ lie in a line. In the first round, we kick out balls $[1, 2, 3, 5]$ (index 1, 2, 3, 5) in order and the remaining balls are $[4, 6]$. In the second round, we kick out $[4, 6]$ (index 1, 2) in order and there is no ball left. So the kicked-out sequence is $D = [1, 2, 3, 5, 4, 6]$. Note that the index of D always starts from 1.



Now you need to answer two types of questions:

- **Type 1** Given n and k , what is the index of k in the kick-out sequence? In other words, find x such that $D[x] = k$.
- **Type 2** Given n and k , what is the k -th number in the kick-out sequence? In other words, find x such that $D[k] = x$.

Input

The first line of the input contains an integer T ($1 \leq T \leq 2 \cdot 10^5$), denoting the number of queries.

For the following T lines, each line contains three integers t, n, k ($t \in \{1, 2\}, 1 \leq k \leq n \leq 10^6$), representing a query of type t mentioned above.

Output

For each query, output the answer in a single line.

Example

standard input	standard output
10	1
1 5 1	2
1 5 2	3
1 5 3	5
1 5 4	4
1 5 5	1
2 5 1	2
2 5 2	3
2 5 3	5
2 5 4	4
2 5 5	