Project Euler #115: Counting block combinations II

HackerRank

This problem is a programming version of Problem 115 from projecteuler.net

A row measuring n units in length has red blocks with a minimum length of m units placed on it, such that any two red blocks (which are allowed to be different lengths) are separated by at least one black square.

Let the fill-count function, $F(m,n)$, represent the number of ways that a row can be filled.

For example, $F(3,29) = 673135$ and $F(3,30) = 1089155$.

That is, for $m = 3$, it can be seen that $n = 30$ is the smallest value for which the fill-count function first exceeds one million.

In the same way, for $m = 10$, it can be verified that $F(10,56) = 880711$ and $F(10,57) = 1148904$, so $n = 57$ is the least value for which the fill-count function first exceeds one million.

For given m, find the least value of n for which $F(m,n) > X$.

Input Format

First line contains an integer T denoting the number of test cases.
Each of the following T lines contain two integers m and X.

Constraints

$1 \le T \le 50$
$1 \le m, X \le 10^{18}$

Output Format

For each of T test cases print one line containing a single integer - the answer to a problem.

Sample Input

```
2
3 1000000
10 1000000
```

Sample Output

```
30
57
```