
Leaks in the Jutge (1)

P21277_en

(This story is more or less based upon real facts.)

Some absent-minded professors inadvertently make the statement of a problem available to everyone the day before an exam. One student notices this fact, and in solidarity he warns k other students. Each one of them warns k other students (all different and who did not know yet), and so on. Knowing the total number of students n and the constant k , when will all students be aware?

Input

Input consists of several cases, each with two natural numbers n and k . Assume $1 \leq n \leq 10^6$ and $1 \leq k \leq 1000$.

Output

For every case, print the moment when all students will be aware. Suppose that the first student is aware at the moment 1, and that transmitting the information requires one unit of time.

Sample input 1

```
1 3
2 3
4 3
5 3
13 3
14 3
524287 2
524288 2
```

Sample output 1

```
1
2
2
3
3
4
19
20
```

Problem information

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