Combinatorial Number Problem

Problem Description

The combinatorial number $\binom{n}{m}$ indicates the number of options to sele t m items out of n c items. For example, choosing two items out of three items (1,2,3) can be done in three ways: (1,2),(1,3),(2,3). Based on the definition of combinatorial numbers, we can give a general formula for calculating the combinatorial number:

$$\binom{n}{m} = \frac{n!}{m!(n-m)!}$$

Where n!= 1 × 2 × ... × n; In particular, define 0!= 1.

Xiaocong wants to know if given n, m and k, for all 0 ≤ i ≤ n, 0 ≤ j ≤ min(i, m), how many pairs of (i, j) satisfy that $k|\binom{i}{j}$.

Input

The first line has two integers t and k, where t represents how many sets of test data there are in total at that test point. The meaning of k is described in the problem description.

Next t lines each have two integers n and m, and the meanings of n and m are shown in the problem description.

Output

There are t lines, each line with an integer representing 0 ≤ i ≤ n, 0 ≤ j ≤ min(i,m). how many pairs of the (i, j) with $k|\binom{i}{j}$.

Sample Input 1

1 2
3 3

Sample Output 1

1

Sample Input 2

2 5
4 5
6 7

Sample Output 2

0

Hint

[Explanation of Sample 1]

Of all the possible cases, only $\binom{2}{1} = 2$ is a multiple of 2.

[Subtask]

Test Point	n	m	k	t
1	≤ 3	≤ 3	= 2	= 1
2			= 3	≤ 10^4
3	≤ 7	≤ 7	= 4	= 1
4			= 5	≤ 10^4
5	≤ 10	≤ 10	= 6	= 1
6			= 7	≤ 10^4
7	≤ 20	≤ 100	= 8	= 1
8			= 9	≤ 10^4
9	≤ 25	≤ 2000	= 10	= 1
10			= 11	≤ 10^4
11	≤ 60	≤ 20	= 12	= 1
12			= 13	≤ 10^4
13	≤ 100	≤ 25	= 14	= 1
14			= 15	≤ 10^4
15		≤ 60	= 16	= 1
16			= 17	≤ 10^4
17	≤ 2000	≤ 100	= 18	= 1
18			= 19	≤ 10^4
19		≤ 2000	= 20	= 1
20			= 21	≤ 10^4

- For all test points, make sure $0 \le n, m \le 2 \times 10^3$, $1 \le t \le 10^4$.