

5116 Dividing Stones

There are N stones, which can be divided into some piles arbitrarily. Let the value of each division be equal to the product of the number of stones in all the piles modulo P . How many possible distinct values are possible for a given N and P ?

Input

The first line contains the number of test cases T .

T lines follow, one corresponding to each test case, containing 2 integers: N and P .

Output

Output T lines, each line containing the required answer for the corresponding test case.

Constraints:

- $T \leq 20$
- $2 \leq N \leq 70$
- $2 \leq P \leq 10^9$

Explanation:

In the first test case, the possible ways of division are (1,1,1), (1,2), (2,1) and (3) which have values 1, 2, 2, 3 and hence, there are 3 distinct values.

In the second test case, the numbers 1 to 6 constitute the answer and they can be obtained in the following ways:

- $1 = 1 * 1 * 1 * 1 * 1$
- $2 = 2 * 1 * 1 * 1$
- $3 = 3 * 1 * 1$
- $4 = 4 * 1$
- $5 = 5$
- $6 = 2 * 3$

Sample Input

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2
3 1000
5 1000
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Sample Output

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3
6
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