

Number of divisors of factorial

The goal of the problem is to compute the number of divisors of $\text{Factorial}(n)$.

Input

The first line of the input consist of a single integer number t which determines the number of tests.

In each of next t lines there is two integer numbers n and m .

Constraints

- $0 < t < 10^2$;
- $0 < n < 2 \times 10^5$;
- $1 < m < 2 \times 10^9$.

Output

For each test case, print the number of divisors of $n! \pmod m$.

Example

Input:

```
3
2 1000
3 100
1234 1000000007
```

Output:

```
2
4
787315782
```

Explanation

For the first test case, $2! = 1 \times 2 = 2$, whose number of divisors is 2 .

For the second test case, $3! = 1 \times 2 \times 3 = 6$, whose number of divisors is 4 .