Mathematician Montu

locked

Problem Submissions Discussions

Time Limit: $C/C++$ $(1s)$, $Java$ $(2s)$
Memory Limit: $256MB$

Montu is a student of a great mathematician. The mathematician has a subtask to complete his research. He has two numbers N and M. He wants to find out how many integers $1 \leq x \leq N$ are there such that $gcd(x, N) = M$.

For example, $N = 20$ and $M = 4$. There are exactly 4 numbers upto 20 where:
$gcd(4, 20) = gcd(8, 20) = gcd(12, 20) = gcd(16, 20) = 4$.

He is very much busy with his research. As Montu is his student, he assigned the task to Montu. But Montu is stuck with this task and he wants your help.

Input Format

The first line contains one integer T — the number of test cases.
First line of each test case contains two integers N and Q.
The next line contains Q integers each representing the value M.

Constraints

$1 \leq T \leq 100$

$1 \leq N \leq 10^{12}$

$1 \leq Q \leq 10^5$

$1 \leq M \leq 10^{12}$

Sum of Q over all testcases does not exceed 10^6.

$Use\ faster\ I/O\ methods.$

Output Format

For each testcase print Q space separated integers representing the answer for each query.

Sample Input 0

```
2
20 5
1 2 3 4 5
30 6
1 2 3 4 5 6
```

Sample Output 0

```
Case 1: 8 4 0 4 2
Case 2: 8 8 4 0 2 4
```

Submissions: 338
Max Score: 1

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C

```c
#include <stdio.h>
#include <string.h>
#include <math.h>
#include <stdlib.h>

int main() {

    /* Enter your code here. Read input from STDIN. Print output to STDOUT */
    return 0;
}
```

Line: 1 Col: 1

Upload Code as File Test against custom input Run Code Submit Code