

D. Same GCDs

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

You are given two integers a and m . Calculate the number of integers x such that $0 \leq x < m$ and $\gcd(a, m) = \gcd(a + x, m)$.

Note: $\gcd(a, b)$ is the greatest common divisor of a and b .

Input

The first line contains the single integer T ($1 \leq T \leq 50$) — the number of test cases.

Next T lines contain test cases — one per line. Each line contains two integers a and m ($1 \leq a < m \leq 10^{10}$).

Output

Print T integers — one per test case. For each test case print the number of appropriate x -s.

Example

input	Copy
3 4 9 5 10 42 9999999967	
output	Copy
6 1 9999999966	

Note

In the first test case appropriate x -s are $[0, 1, 3, 4, 6, 7]$.

In the second test case the only appropriate x is 0.

Educational Codeforces Round 81 (Rated for Div. 2)

Finished

Practice



→ Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

→ Practice

You are registered for practice. You can solve problems unofficially. Results can be found in the contest status and in the bottom of standings.

→ Clone Contest to Mashup

You can clone this contest to a mashup.

Clone Contest

→ Submit?

Language: GNU G++17 7.3.0 ▼

Choose file: Choisir un fichier Aucun f...choisi

Submit

→ Problem tags

math number theory *1800
No tag edit access

→ Contest materials

- Announcement (en) ✕
- Tutorial ✕



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