Problem G. GCD

Time limit: 3 seconds
Memory limit: 1024 megabytes

Does anyone understand why many problem setters think it is funny to place a GCD-themed problem as problem G?

—Braised-chicken

Given two integers a and b, you can perform one of the following two operations in each round:

- If $a > 0$, then reduce the value of a by $\gcd(a, b)$.
- If $b > 0$, then reduce the value of b by $\gcd(a, b)$.

Grace wants to know the minimum number of rounds needed to make both a and b become 0.

† $\gcd(x, y)$ denotes the greatest common divisor of x and y. For example, $\gcd(6, 8) = 2, \gcd(7, 5) = 1$. The values of $\gcd(x, 0)$ and $\gcd(0, x)$ are defined as x.

Input

Each test file contains multiple test cases. The first line contains the number of test cases T ($1 \le T \le 1000$). The description of the test cases follows.

Each test case consists of a single line containing two integers a and b ($1 \le a \le b, a \le 5000, b \le 10^{18}$).

For each test file, it is guaranteed that the sum of a over all test cases does not exceed 10^4.

Output

For each test case, output a single integer representing the minimum number of rounds needed to make both a and b become 0.

Example

standard input	standard output
3 3 4 12 20 114 514	3 4 6

Note

For the first test case in the example, one possible optimal solution is:

- Perform an operation on a: $a = 3 - \gcd(3, 4) = 2$.
- Perform an operation on a: $a = 2 - \gcd(2, 4) = 0$.
- Perform an operation on b: $b = 4 - \gcd(0, 4) = 0$.