Difference and Product

HackerRank

Tim likes Math. He likes it so much that he always brings his tablets with him and reads math e-books everywhere, even during parties.

Tim found an interesting exercise in one of the e-books he is reading. But you want him to join the party, so you decide to answer the question for him.

The problem is: Given D and P, how many ordered pairs of integers are there whose absolute difference is D and whose product is P? In other words, how many pairs of integers (A, B) are there such that:

$$|A - B| = D$$

$$A \times B = P$$

Input Format

The first line of input contains T, the number of test cases. The next T lines describe the test cases.

Each test case consists of a single line containing two integers D and P separated by a single space.

Output Format

For each test case, output a single line containing a single integer which is the answer for that test case.

Constraints

$1 \leq T \leq 20000$
$|D| \leq 10^9$
$|P| \leq 10^9$

Sample Input

```
3
1 2
0 4
-1 1
```

Sample Output

```
4
2
0
```

Explanation

Case 1: There are four pairs of integers with absolute difference 1 and product 2, namely $(1, 2)$, $(2, 1)$, $(-1, -2)$, $(-2, -1)$.

Case 2: There are two pairs of integers with absolute difference 0 and product 4, namely $(2, 2)$, $(-2, -2)$.

Case 3: There are no pairs of integers with absolute difference -1, because the absolute value is never negative.