# Difference and Product

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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.

**Submissions:** 737
**Max Score:** 20
**Difficulty:** Easy

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C

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

int main(void) {
    int T;
    scanf("%i", &T);
    for (int j = 1; j <= T; j++)
    {
        int D, P, k = 2, status = 0;
        scanf("%i %i", &D, &P);
        int a = round(sqrt(abs(P)));
        if (D == 0 && P == 0)
            printf("1\n");
        else if ((D < 0) || (D == 0 && P < 0))
            printf("0\n");
        else if ((D == 0 && (P == 1 || P == a*a)) || (D == 2 && P == -1) ||
                 (P < 0 && D > 0 && sqrt(abs(P)) == D/2.0 && D%2 == 0))
            printf("2\n");
        else if (D == P - 1 || (D == abs(P) + 1 && P < 0) || P == 0)
            printf("4\n");
        else
        {
            while(k <= a)
            {
                if ((P > 0 && P % k == 0 && P / k == k + D) ||
                    (P < 0 && P % k == 0 && abs(P / k) == D - k))
                {
                    printf("4\n");
                    status = 1;
                    break;
                }
                k++;
            }
            if (status == 0) printf("0\n");
        }
    }
}


```

Line: 1 Col: 1

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

## Congrats, you solved this challenge!

- ✔ Test Case #0
- ✔ Test Case #1
- ✔ Test Case #2
- ✔ Test Case #3
- ✔ Test Case #4
- ✔ Test Case #5
- ✔ Test Case #6
- ✔ Test Case #7
- ✔ Test Case #8

- ✔ Test Case #9
- ✔ Test Case #10
- ✔ Test Case #11
- ✔ Test Case #12
- ✔ Test Case #13
- ✔ Test Case #14
- ✔ Test Case #15
- ✔ Test Case #16

Next Challenge