Rhodes Coding Challenges

1. **Diagonal Difference**

Given a square matrix, calculate the absolute difference between the sums of its diagonals.

For example, the square matrix  is shown below:

1 2 3

4 5 6

9 8 9

The left-to-right diagonal = . The right to left diagonal = . Their absolute difference is .

**Function description**

Complete the  function in the editor below. It must return an integer representing the absolute diagonal difference.

diagonalDifference takes the following parameter:

* *arr*: an array of integers .

**Input Format**

The first line contains a single integer, , the number of rows and columns in the matrix .   
Each of the next  lines describes a row, , and consists of  space-separated integers .

**Constraints**

**Output Format**

Print the absolute difference between the sums of the matrix's two diagonals as a single integer.

**Sample Input**

3

11 2 4

4 5 6

10 8 -12

**Sample Output**

15

**Explanation**

The primary diagonal is:

11

5

-12

Sum across the primary diagonal: 11 + 5 - 12 = 4

The secondary diagonal is:

4

5

10

Sum across the secondary diagonal: 4 + 5 + 10 = 19   
Difference: |4 - 19| = 15

**Note:** |x| is the [absolute value](https://www.mathsisfun.com/numbers/absolute-value.html) of x

1. **Sherlock and Squares**

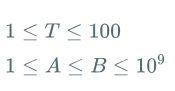
Watson likes to challenge Sherlock's math ability. He will provide a starting and ending value describing a range of integers. Sherlock must determine the number of *square integers* within that range, inclusive of the endpoints.

**Note**: A square integer is an integer which is the square of an integer, e.g. .

**Input Format**

The first line contains , the number of test cases.   
Each of the next  lines contains two space-separated integers denoting  and , the starting and ending integers in the ranges.

**Constraints**



**Output Format**

For each test case, print the number of square integers in the range on a new line.

**Sample Input**

2

3 9

17 24

**Sample Output**

2

0

**Explanation**

*Test Case #00:* In range ,  and  are the two square integers.   
*Test Case #01:* In range , there are no square integers.