Inti Sets

locked

by *IEEEXtreme*

In order to motivate his Peruvian students, a teacher includes words in the Quechua language in his math class.

Today, he defined a curious set for a given positive integer *N*. He called this set, an ***Inti set***, and defined it as the set of all positive integer numbers that have the number *1* as their single common positive divisor with number *N*.

The math class about Inti sets was amazing. After class, the students try to challenge to teacher. They each ask questions like this: "Could you tell me the sum of all numbers, between *A* and *B* (inclusive), that are in the Inti set of *N*?"

Since the teacher is tired and he's sure that you are the best in class, he wants to know if you can help him.

Input Format

The first line of input contains an integer *Q*, $1 \le Q \le 20$, representing the number of students. Each of the next *Q* lines contain three space-separated integers *N*, *A* and *B*, which represent a query.

Constraints

$1 \le A \le B \le N \le 10^{12}$

Output Format

The output is exactly *Q* lines, one per student query. For each query you need to find the sum of all numbers between A and B, that are in the Inti set of N, and print the sum modulo 1000000007.

Sample Input

```
2
12 5 10
5 1 4
```

Sample Output

```
12
10
```

Explanation

In the sample input, *Q* = 2, so you have to answer two questions:

In the first question *N* = 12, *A* = 5 and *B* = 10. So you have to find the sum of all numbers between 5 and 10, that are in the Inti set of 12.

Inti set (12) = { 1, 5, 7, 11, 13, ... }

2 and 4 are not in the Inti set (12) because 12 and these numbers are also divisible by 2.

3 and 9 are not in the Inti set (12) because 12 and these numbers are also divisible by 3.

The numbers in the Inti set, which are in the query's range, are 5 and 7, so answer is (5 + 7) MOD 1000000007 = 12

In the second question, the numbers in the Inti set of 5 between 1 and 4 are: 1, 2, 3, 4; so the answer is (1 + 2 + 3 + 4) MOD 1000000007 = 10

Max Score: 93pts dynamic

Submissions: 1591
Max Score: 93
Difficulty: Hard
More

Current Buffer (saved locally, editable)

BASH

```
1
```

Upload Code as File

Test against custom input

Run Code | Submit Code