Pair Divisible 2

Let $C(N, a, b)$ be the number of integer pairs (x, y) in $1 \le x \le a$, $1 \le y \le b$ such that xy is divisible by N.

Given N, a and b, find $C(N, a, b)$ **modulo** 10^{9}.

Input

The first line contains T, the number of test cases.

In each of the next T lines, you are given three numbers N, a and b.

Output

For each test case, print $C(N, a, b)$ **modulo** 10^{9}.

Constraints

$1 \le T \le 100$

$1 \le N \le 10^{18}$, $1 \le a \le 10^{18}$, $1 \le b \le 10^{18}$.

You can assume that the **maximum prime factor** of N is less than or equal to 10^{5}.

Example

Input

```
5
1 1 1
2 2 2
10 10 10
100 100 100
1 10000 100000
```

Output

```
1
3
27
520
0
```