Easy Summation

Time Limit: - 2 secs

The problem statement is so small. Give you four integers r, a, b, d. Find the summation of all numbers from 1 to r, those are divisible by a or b. Since the result can be very large, you have to print the result modulo d.

Mathematically,

$$\left(\sum_{i=1}^{r} i \right) \% d \quad [\text{if } i \% a == 0 \text{ or } i \% b == 0]$$

Input

At first gives you an integer T (T<=100000), is the number of test cases. Each test case contains four integers r, a, b, d (1 <= r <= 10^18, 1<= a, b, d <= 10^9).

Output

For every test case, print requires result.

Sample Input

2

10 3 5 7

15 7 14 7

Sample Output

5

0

Look, for test case 1. From 1 – 10, there are 5 numbers 3, 5, 6, 9, 10 those are divisible by 3 or 5. So (3+5+6+9+10) % 7 = 33 % 7 = 5.