

7542 Wait for it

Given N , A and B , find the value of the following expression:

$$\sum_{i=1}^N \sum_{j=1}^N \gcd(A^i - B^i, A^j - B^j)$$

Since the value can be large, find it modulo $(10^9 + 7)$.

Input

- The first line of the input contains an integer T denoting the number of test cases. The description of T test cases follows.
- Each test case consists of a single line containing three space-separated integers — A , B , and N .

Output

- For each test case, output a single line containing the value of the expression modulo $(10^9 + 7)$.

Constraints:

- $1 \leq N \leq 10^9$
- $1 \leq B < A \leq 10^9$
- $\text{GCD}(A, B) = 1$, i.e., A and B are coprime.

Explanation:

Example case 1. The summation expands to $\gcd(1, 1) + \gcd(5, 1) + \gcd(1, 5) + \gcd(5, 5) = 8$.

Example case 2. The summation expands to $\gcd(1, 1) + \gcd(3, 1) + \gcd(1, 3) + \gcd(3, 3) = 6$.

Sample Input

```
2
3 2 2
2 1 2
```

Sample Output

```
8
6
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