Problem A2
Divisibility (Hard Version)

Time limit: 1 second
Memory limit: 2048 megabytes

Problem Description

Given two positive integers a and b, we create an ascending array of positive integers that are divisible by either a or b, **but not both simultaneously**.

For example, if $a = 2$ and $b = 3$, the initial terms of the list would be: $2, 3, 4, 8, 9, 10, 14, 15, 16, \ldots$. Your task is to find the k-th term in this array.

Input Format

The first line of the input contains an integer t denoting the number of testcases. Each of the following t lines contains three positive integers a, b and k.

Output Format

For each testcase, output the k-th term of the array in one line.

Technical Specification

- $1 \leq t \leq 1000$
- $1 \leq a < b \leq 10^9$
- $1 \leq k \leq 10^9$
- It is guaranteed that the answer would not exceed 10^{18}.

Sample Input 1

```
12
1 2 1
1 2 2
2 3 1
2 3 2
2 3 3
2 3 4
3 6 1
3 6 2
37 61 100
42 91 123
9999 10000 1
9999 10000 2
```

Sample Output 1

```
1
3
2
3
4
8
3
9
2368
3948
9999
10000
```

Sample Input 2

```
12
2 3 1
2 3 4
2 3 100
1 42 1000000000
5 10 3
9 12 9
9 12 10
9 12 11
5 7 19
759208302 883019287 883271940
999999999 1000000000 1000000000
500000000 1000000000 1000000000
```

Sample Output 2

```
2
8
200
1024390243
25
60
63
81
63
360572190497677566
500000000000000000
999999999500000000
```

Hint

Conduct a binary search for the desired answer within the range from 1 to 10^{18}.

In each iteration of the binary search, when the answer falls within the interval between l and r, and m is calculated as $m = \lfloor \frac{l+r}{2} \rfloor$, proceed to count the number of integers between 1 and m that satisfy the given condition. Adjust the values of l or r based on whether or not this count is at least k.