Blitz Division (`divisor`)

Alex is passionate about diverse mathematical challenges, and as a gift for you to start the new IIOT season, he gives you three positive integers A, B and K. He tells you that you must use **exactly** K increments (i.e., increasing a value by one) on A and B, in any way you want. Now, he wants to find the greatest possible value of the greatest common divisor of the two integers obtained after the increments.

Figure 1: The mind of Alex is buzzing with mathematical challenges.

For example, if $A = 7$, $B = 11$ and $K = 3$, the answer is 7, because we can use all 3 increments on B to make it equal to 14 and $gcd(7, 14) = 7$. However, if $A = 18$, $B = 9$ and $K = 3$, the answer is 10 ($A = 20$, $B = 10$ after incrementing the values 3 times).

Alex decided to test you on T such triplets. Show Alex that math is your friend as well!

> ☞ Among the attachments of this task you may find a template file `divisor.*` with a sample incomplete implementation.

Input

The first line contains T, the number of test cases. Each of the next T lines contains three positive integers, A, B, and K.

Output

You need to write T lines, each line containing the answer for the corresponding triple of values.

Constraints

- $1 \leq T \leq 100$.
- $1 \leq A, B, K \leq 10^9$.

Scoring

Your program will be tested against several test cases grouped in subtasks. In order to obtain the score of a subtask, your program needs to correctly solve all of its test cases.

– **Subtask 1** (0 points) Examples.

– **Subtask 2** (30 points) $A, B, K \leq 10\,000$.

– **Subtask 3** (70 points) No additional limitations.

Examples

input	output
4 7 11 3 18 9 3 58 38 14 68 94 231	7 10 22 131

Explanation

The first two triples of the **sample case** were explained in the statement. For the third triple, you can increment the numbers to 66 and 44, respectively. For the last triple, you can increment the numbers to 131 and 262, respectively. It can be proved that these values are optimal.