

[HOME](#) [CONTESTS](#) [GYM](#) [PROBLEMSET](#) [GROUPS](#) [RATING](#) [API](#) [AIM TECH ROUND](#)  [VK CUP](#)  [SECTIONS](#)
[PROBLEMS](#) [SUBMIT CODE](#) [MY SUBMISSIONS](#) [STATUS](#) [HACKS](#) [ROOM](#) [STANDINGS](#) [CUSTOM INVOCATION](#)

## B. Friends and Presents

time limit per test: 1 second  
 memory limit per test: 256 megabytes  
 input: standard input  
 output: standard output

You have two friends. You want to present each of them several positive integers. You want to present  $cnt_1$  numbers to the first friend and  $cnt_2$  numbers to the second friend. Moreover, you want all presented numbers to be distinct, that also means that no number should be presented to both friends.

In addition, the first friend does not like the numbers that are divisible without remainder by prime number  $x$ . The second one does not like the numbers that are divisible without remainder by prime number  $y$ . Of course, you're not going to present your friends numbers they don't like.

Your task is to find such minimum number  $v$ , that you can form presents using numbers from a set  $1, 2, \dots, v$ . Of course you may choose not to present some numbers at all.

A positive integer number greater than 1 is called *prime* if it has no positive divisors other than 1 and itself.

### Input

The only line contains four positive integers  $cnt_1, cnt_2, x, y$  ( $1 \leq cnt_1, cnt_2 < 10^9$ ;  $cnt_1 + cnt_2 \leq 10^9$ ;  $2 \leq x < y \leq 3 \cdot 10^4$ ) — the numbers that are described in the statement. It is guaranteed that numbers  $x, y$  are prime.

### Output

Print a single integer — the answer to the problem.

### Examples

input
3 1 2 3
output
5

input
1 3 2 3
output
4

### Note

In the first sample you give the set of numbers  $\{1, 3, 5\}$  to the first friend and the set of numbers  $\{2\}$  to the second friend. Note that if you give set  $\{1, 3, 5\}$  to the first friend, then we cannot give any of the numbers 1, 3, 5 to the second friend.

In the second sample you give the set of numbers  $\{3\}$  to the first friend, and the set of numbers  $\{1, 2, 4\}$  to the second friend. Thus, the answer to the problem is 4.

### Codeforces Round #275 (Div. 2)

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### → Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ACM-ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

[Start virtual contest](#)

### → Practice

You are registered for practice. You can solve problems unofficially. Results can be found in the contest status and in the bottom of standings.

### → Submit?

Language: GNU G++11 5.1.0 ▼

Choose file: [Choose File](#) No file chosen



Be careful: there is 50 points penalty for submission which fails the pretests or resubmission (except failure on the first test, denial of judgement or similar verdicts). "Passed pretests" submission verdict doesn't guarantee that the solution is absolutely correct and it will pass system tests.

[Submit](#)

### → Problem tags

[binary search](#) [math](#) No tag edit access

### → Contest materials

- Announcement 
- Tutorial 

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