

Testing Round #8

A. IQ Test

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

Petya is preparing for IQ test and he has noticed that there many problems like: *you are given a sequence, find the next number*. Now Petya can solve only problems with arithmetic or geometric progressions.

Arithmetic progression is a sequence $a_1, a_1 + d, a_1 + 2d, \dots, a_1 + (n - 1)d$, where a_1 and d are any numbers.

Geometric progression is a sequence $b_1, b_2 = b_1q, \dots, b_n = b_{n-1}q$, where $b_1 \neq 0, q \neq 0, q \neq 1$.

Help Petya and write a program to determine if the given sequence is arithmetic or geometric. Also it should found the next number. If the sequence is neither arithmetic nor geometric, print 42 (he thinks it is impossible to find better answer). You should also print 42 if the next element of progression is not integer. So answer is always integer.

Input

The first line contains exactly four integer numbers between 1 and 1000, inclusively.

Output

Print the required number. If the given sequence is arithmetic progression, print the next progression element. Similarly, if the given sequence is geometric progression, print the next progression element.

Print 42 if the given sequence is not an arithmetic or geometric progression.

Examples

input
836 624 412 200
output
-12

input
1 334 667 1000
output
1333

Note

This problem contains very weak pretests!

B. Sheldon and Ice Pieces

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

Do you remember how Kai constructed the word "eternity" using pieces of ice as components?

Little Sheldon plays with pieces of ice, each piece has exactly one digit between 0 and 9. He wants to construct his favourite number t . He realized that digits 6 and 9 are very similar, so he can rotate piece of ice with 6 to use as 9 (and vice versa). Similarly, 2 and 5 work the same. There is no other pair of digits with similar effect. He called this effect "Digital Mimicry".

Sheldon favourite number is t . He wants to have as many instances of t as possible. How many instances he can construct using the given sequence of ice pieces. He can use any piece at most once.

Input

The first line contains integer t ($1 \leq t \leq 10000$). The second line contains the sequence of digits on the pieces. The length of line is equal to the number of pieces and between 1 and 200, inclusive. It contains digits between 0 and 9.

Output

Print the required number of instances.

Examples

input
42 23454
output
2

input
169 12118999
output
1

Note

This problem contains very weak pretests.