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**F004B. Stable products****P89407\_en**

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The product of  $x$  by  $y$  is stable if the digits of  $x$  and  $y$  on one hand, and the digits of  $x * y$  on the other hand, are the same ones.

For instance, the product

$$875 * 650 = 568750$$

is stable because in the both sides there is a 0, two 5, a 6, a 7 and a 8.

This property can be extended to other bases different of 10. For instance, the product of 3 by 53 is stable in base 2:

$$11 * 110101 = 10011111$$

because in both sides there are two 0 and six 1.

Your task is to write a program that, given a sequence of pairs  $x$  and  $y$ , prints which bases between 2 and 16 (both included) the product  $x * y$  is stable for.

To solve this problem, you must implement and use the function

```
bool same_digits (int  $x$ , int  $y$ , int  $b$ );
```

that indicates if, in base  $b$  ( $2 \leq b \leq 16$ ),  $x$  and  $y$  in one hand, and  $x * y$  in the other one, have the same digits.

You must implement and use also the procedure

```
void print (int  $n$ , int  $b$ );
```

that prints  $n$  in base  $b$  in the screen (just like that, without spaces nor line feeds).

**Input**

The input is a sequence of pairs of natural numbers  $x$  and  $y$ .  $x \geq 1$ ,  $y \geq 1$ ,  $x * \text{and} \leq 10^9$  are fulfilled. You can assume this information as a precondition of your procedures.

**Output**

For each pair  $x$  and  $y$ , print which bases the product  $x * y$  is stable for. If there is not any base, print it. It must print a line feed after the output of each case. Follow the format of the instance.

## Sample input

```
875 650
3 53
140 245
1 1
118 224
```

## Sample output

```
solutions for 875 and 650
1101101011 * 1010001010 = 10001010110110101110 (base 2)
31223 * 22022 = 2022312232 (base 4)
4015 * 3002 = 20105034 (base 6)
875 * 650 = 568750 (base 10)

solutions for 3 and 53
11 * 110101 = 10011111 (base 2)

solutions for 140 and 245
10001100 * 11110101 = 1000010111111100 (base 2)
2030 * 3311 = 20113330 (base 4)
8C * F5 = 85FC (base 16)

solutions for 1 and 1
none of them

solutions for 118 and 224
A8 * 194 = 1894A (base 11)
```

## Observation

If you do tests with random numbers and your program do not find any solution, do not worry: most products are *not* stable.

## Problem information

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