F004B. Stable products P89407_en

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. $x \geq 1$, $y \geq 1$, $x * and \leq 10^9$ 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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