## Project Euler \#243: Resilience

This problem is a programming version of Problem 243 from projecteuler.net
A positive fraction whose numerator is less than its denominator is called a proper fraction. For any denominator $d$, there will be $d-1$ proper fractions.

We shall call a fraction that cannot be cancelled down a resilient fraction. Furthermore we shall define the resilience of a denominator $R(d)$ to be the ratio of its proper fractions that are resilient.

For example, for $d=12: 1 / 12,5 / 12,7 / 12,11 / 12$ are the resilient fractions.
Therefore, $R(12)=4 / 11$
In fact, $d=12$ is the smallest denominator having a resilience $R(d)<4 / 10$
Given pairs of integers $a_{i}, b_{i}$, representing numerator and denominator of a proper fraction $q_{i}$, find the smallest denominator $d$, having resilience $R(d)<q_{i}$

## Input Format

The first line of each test file contains a single integer $T$. Next $T$ lines each contain a pair of integers $a_{i}$, $b_{i}$, separated by a single space, representing $q_{i}$.

## Constraints

- $1 \leq T \leq 50000$
- $1 \leq a_{i}<b_{i} \leq 100000$
- $q_{i} \geq 1 / 10$


## Output Format

For each $q_{i}$ print the answer on a separate line.

## Sample Input 0

```
1
410
```


## Sample Output 0

```
1 2
```


## Explanation 0

See problem description

