

Problem E. 质因数分解5

Time limit 1000 ms
Mem limit 524288 kB

Oleg's favorite subjects are History and Math, and his favorite branch of mathematics is division.

To improve his division skills, Oleg came up with t pairs of integers p_i and q_i and for each pair decided to find the **greatest** integer x_i , such that:

- p_i is divisible by x_i ;
- x_i is not divisible by q_i .

Oleg is really good at division and managed to find all the answers quickly, how about you?

Input

The first line contains an integer t ($1 \leq t \leq 50$) — the number of pairs.

Each of the following t lines contains two integers p_i and q_i ($1 \leq p_i \leq 10^{18}$; $2 \leq q_i \leq 10^9$) — the i -th pair of integers.

Output

Print t integers: the i -th integer is the largest x_i such that p_i is divisible by x_i , but x_i is not divisible by q_i .

One can show that there is always at least one value of x_i satisfying the divisibility conditions for the given constraints.

Examples

Input	Output
3 10 4 12 6 179 822	10 4 179

Note

For the first pair, where $p_1 = 10$ and $q_1 = 4$, the answer is $x_1 = 10$, since it is the greatest divisor of 10 and 10 is not divisible by 4.

For the second pair, where $p_2 = 12$ and $q_2 = 6$, note that

- 12 is not a valid x_2 , since 12 is divisible by $q_2 = 6$;
- 6 is not valid x_2 as well: 6 is also divisible by $q_2 = 6$.

The next available divisor of $p_2 = 12$ is 4, which is the answer, since 4 is not divisible by 6.