

Namit In Trouble

Namit's girlfriend birthday is coming next week. He went to a gift shop and saw (N) gifts are arranged in a single row in such a way that the position at which the gift is placed is equal to its price. **(Position starts from 1.)**

Namit's girlfriend being a maths student like those numbers which have exactly 3 divisors, so Namit decide to buy only those gifts which are placed at a position which have only 3 divisors, but Namit's girlfriend likes gifts whose price are above a certain amount (K) .

Now Namit wants to know total choices he have and how many gifts his girlfriend like for a given value of N .

Input

Input starts with $1 \leq T \leq 1000$ (number of test cases). Then T lines follows each containing two integer $1 \leq N < 10^{10}$ (number of gifts at gift shop) and $1 \leq K \leq 10^{10}$.

Output

Your program should output two values indicating total number of choices and the number of gifts Namit's girlfriend like.

Example

Input:

3

10 2

20 7

10 4

Output:

2 2

2 1

2 1