D. Soldier and Number Game

time limit per test: 3 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

Two soldiers are playing a game. At the beginning first of them chooses a positive integer n and gives it to the second soldier. Then the second one tries to make maximum possible number of rounds. Each round consists of choosing a positive integer $x > 1$, such that n is divisible by x and replacing n with n / x. When n becomes equal to 1 and there is no more possible valid moves the game is over and the score of the second soldier is equal to the number of rounds he performed.

To make the game more interesting, first soldier chooses n of form $a! / b!$ for some positive integer a and b ($a \geq b$). Here by $k!$ we denote the *factorial* of k that is defined as a product of all positive integers not large than k.

What is the maximum possible score of the second soldier?

Input

First line of input consists of single integer t ($1 \leq t \leq 1\,000\,000$) denoting number of games soldiers play.

Then follow t lines, each contains pair of integers a and b ($1 \leq b \leq a \leq 5\,000\,000$) defining the value of n for a game.

Output

For each game output a maximum score that the second soldier can get.

Examples

input
2 3 1 6 3
output
2 5

Codeforces Round #304 (Div. 2)
Finished

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→ Problem tags

constructive algorithms dp math number theory

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→ Contest materials

- Announcement
- Tutorial