Problem H
Semiprime Numbers
Time limit: 1 second
Memory: 1024 megabytes

Problem Description

In the field of mathematics, particularly number theory, the classification and identification of numbers with special properties is always an interesting and challenging topic. One of the important concepts that many mathematicians study is prime numbers, with their unique properties. Prime numbers are those greater than 1 that have only two divisors: 1 and themselves. These numbers play a crucial role in many areas of mathematics and practical applications, from information encryption to complex theories in number theory.

In addition to prime numbers, we also have the concept of semiprime numbers. A semiprime number is defined as an integer that has a prime number of divisors. Identifying semiprime numbers can help us explore more about the structure of natural numbers and how they interact with one another. This is not only theoretical but also has practical applications in computer science, information security, and other fields.

Problem Requirements: Our task is to count the number of semiprime numbers in a specific arithmetic interval defined by pairs of numbers (a,b). For each pair of numbers, we will identify those that have a prime number of divisors and provide the result. Performing this task can become quite complex due to the possible large range of values for a and b (up to 10^6), and the number of intervals to check can reach 10^5. Therefore, an efficient and optimized approach is needed to ensure we can complete this task in a reasonable time frame.

Input Structure:

- The first line contains a positive integer T (with $T \leq 10^5$), representing the number of intervals to count.
- The next T lines each contain two positive integers a and b (with $a \leq b \leq 10^6$), separated by a space.

Output Structure:

- The program will output T lines, each containing the count of semiprime numbers in the interval [a, b].

Example:

INPUT	OUTPUT
2	4
2 5	32
1 100	