

Sum of divisors!

Note: If you really want to learn something by solving this problem, don't hard code! There is a nice logic behind this!

Kartheeswaran was recently reading an article on perfect numbers, whose sum of divisors equals twice the number. He was intrigued by them and decided to generate them but to his disappointment they turned out to be quite rare. So he decided to look out for a different property related to sum of divisors. What is more interesting than a number being a prime? So he decided to look out for numbers whose sum of divisors is a prime number and he was the inventor of these special numbers he gave them the name K-numbers.

Given a range $[A, B]$ you are expected to find the number of K-numbers in this range.

Input

The first line of input indicates the number of test cases T . Then in the following T lines there will be a pair of integers A and B .

Output

Output T lines each containing a single integer 'c' which denotes the number of K-numbers which lie in the interval $[A, B]$ inclusive of the end points.

Constraints

$$1 \leq T \leq 10000$$

$$1 \leq A \leq B \leq 10^6$$

Example

Input:

```
2
1 5
9 10
```

Output:

```
2
1
```

Explanation of Sample

1) In the range $[1, 5]$ the K-numbers are 2 and 4 because divisors of 2 are 1 and 2 which sum up to 3, which is a prime. Divisors of 4 are 1, 2 and 4 which sum up to 7, which is a prime.

2) The only K-number in the range $[9, 10]$ is 9.