A number is called a DePrime if the sum of its prime factors is a prime number.

Given a and b count the number of DePrimes x_i such that $a \leq x_i \leq b$.

Input

Each line contains a and b in the format 'a b'. $2 \leq a \leq 5000000$. $a \leq b \leq 5000000$.

Input is terminated by a line containing '0'.

Output

Each line should contain the number of DePrimes for the corresponding test case.

Explanation:

In Test Case 2, take 10. Its Prime Factors are 2 and 5. Sum of Prime Factors is 7, which is a prime. So, 10 is a DePrime.

Sample Input

```
2 5
10 21
100 120
0
```

Sample Output

```
4
9
9
```