

Möbius function zero distribution

In number theory and combinatorics [Möbius function](#) $\mu(n)$ for integer $n > 0$ is defined as follows:

$$\mu(1) = 1$$

$$\mu(n) = (-1)^k \text{ if } n \text{ is the product of } k \text{ (} k > 0 \text{) distinct primes}$$

$$\mu(n) = 0 \text{ otherwise.}$$

Let's define integer $n > 0$ as **nfr point** of Möbius function if $\mu(n) = 0$. Given closed interval $[a, b]$ compute number of **nfr points** from this interval.

Input

Each line of input contains two space separated random integer numbers a and b ($1 \leq a \leq b \leq 100\,000\,000$). Input terminates with two space separated 0 (zero). There will be one input file.

Output

For each pair print required value on new line.

Example

Input:

```
1 1
2 4
3 7
4 10
5 9
6 10
0 0
```

Output:

```
0
1
1
3
2
2
```