

# Birthday Gift for SJ

Today is your best friend SJ's birthday. You want to buy a birthday present for her. You want to buy such a present that she likes the most. You are very superstitious. You think that, SJ will love your gift, if the price of the present you buy is an **interesting number** ( pretty weird isn't it :P ).



**Interesting numbers are :**

1. A number of the format  $x^y$ . Where  $x \geq 2$  and  $y \geq 2$ . For example,  $4 = 2^2$ ,  $8 = 2^3$ ,  $9 = 3^2$  etc. are interesting numbers. Here  $x$  and  $y$  are integers.
2. Summation of **two or more** interesting numbers is also an **interesting number**. For example  $13 = 9 + 4$ ,  $17 = 9 + 4 + 4$  etc. are interesting numbers.

## Input

The first line of the input is an integer  $t$  denoting the number of test cases. Then  $t$  line follows. Each line has two integers  $a$  and  $b$ .

## Output

For each case you have to print a single line denoting the number of **interesting numbers** between  $a$  and  $b$  (**inclusive**).

## Constraints

- $1 \leq t \leq 10^5$
- $1 \leq a \leq b \leq 10^{18}$

Sample Input	Output for Sample Input
3	1
1 4	2
7 10	4
15 20	

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