

Problem N. Triple Operations

Time limit 1000 ms
Mem limit 262144 kB

On the board Ivy wrote down all integers from l to r , inclusive.

In an operation, she does the following:

- pick two numbers x and y on the board, erase them, and in their place write the numbers $3x$ and $\lfloor \frac{y}{3} \rfloor$. (Here $\lfloor \bullet \rfloor$ denotes rounding down to the nearest integer).

What is the minimum number of operations Ivy needs to make all numbers on the board equal 0? We have a proof that this is always possible.

Input

The first line contains an integer t ($1 \leq t \leq 10^4$) — the number of test cases.

The only line of each test case contains two integers l and r ($1 \leq l < r \leq 2 \cdot 10^5$).

Output

For each test case, output a single integer — the minimum number of operations needed to make all numbers on the board equal 0.

Examples

Input	Output
4 1 3 2 4 199999 200000 19 84	5 6 36 263

Note

In the first test case, we can perform 5 operations as follows:

$$1, 2, 3 \xrightarrow{x=1, y=2} 3, 0, 3 \xrightarrow{x=0, y=3} 1, 0, 3 \xrightarrow{x=0, y=3} 1, 0, 1 \xrightarrow{x=0, y=1} 0, 0, 1 \xrightarrow{x=0, y=1} 0, 0, 0.$$

