123

(Time Limit = 2 second)

Maria and Nathalia(together known as Maranatha pair :P) are two best friends who likes playing games. This time they are playing a game named “123”. The rules are simple, they choose two numbers A and B, starting number and target number respectively. They need to convert the starting number into target number with cost as little as possible. The valid moves for every step are:

- Add 1 (cost 1)
- Subtract 1 (cost 1)
- Multiply 2 (cost 2)
- Divide 2 (cost 2, number has to be divisible by 2)
- Multiply 3 (cost 3)
- Divide 3 (cost 3, number has to be divisible by 3)

Your task is to help Maria compute the minimum cost needed to convert the starting number into the target number. Nathalia would be angry if she knows that you help Maria!

Input

The first line of input contains one integer T ($1 \leq T \leq 100$), number of test cases. The first line of every test case contains two integers A and B ($1 \leq A,B \leq 10000$), the starting number and the target number.

Output

For every test case, print the minimum needed cost to change starting number into target number.

Sample Input

```
3
1 2
9 1
24 36
```

Sample Output

```
1
5
5
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