Problem S. Playing With Numbers

Time limit	1000 ms
Code length Limit	50000 B
OS	Linux

Chef's brother has visited the Chef during his summer vacation. Chef's brother loves to play with numbers. So Chef gave him **2** numbers **A** and **B**. Chef asked his brother to find the minimum number of steps required to reach **B** from **A** given only the following operations can be performed any number of times:

- **Decrement** the current number by **1**
- **Increment** the current number by **3**
- **Multiply** the current number by **2**

Chef's brother found this problem very easy and asked you to solve it. Can you solve this problem for him?

Input

- The first line of the input contains an integer **T** denoting the number of test cases. The description of T test cases follows.
- The first and only line of each test case contains two space-separated integers **A** and **B**.

Output

For each test case, output a single line containing the answer.

Constraints

- **1 ≤ T ≤ 100**
- **0 ≤ A,B ≤ $2*10^3$**

Example

Input:

```
2

4 7
```

0 10

Output:

1

4

Explanation

Test case 1. You can reach from 4 to 7 in just one step by adding 3.

Test case 2. It is possible to reach 10 from 0 in just 4 steps. 0 -> 3 -> 6 -> 5 -> 10 First add 3 to the number 2 times to get 6, then subtract 1 from it to get 5, and then just double it to get 10.