
Problem A. Rescue the Princess

Input file: `standard input`
Output file: `standard output`
Time limit: 2 seconds
Memory limit: 32 megabytes

King Fenry of a faraway kingdom of rich Frogs came to Zrog for his help in rescuing her daughter from the mystical trap of prime factors. Zrog was renowned for his mathematical skill and expertise with numbers even in distant kingdoms. Zrog decided to help King Fenry, but of course for a big reward.

King Fenry's daughter was kept prisoner in a very, very tall magical tower. She was in the Y th level of that tower. But there was no direct staircase or ladder in the tower to climb up to the top, one can only go directly to X th level using a ladder. After this point there are some magical bricks that comes off the wall and creates spots to land on. But the magical bricks at different level comes off depending on the climber's current level, and they change as soon as the climber jumps to another level.

Once someone is at level n , they can jump to the next magical bricks which are at level $(n + m)$. m here can be any prime factor of the number n , except 1 and n itself. Until someone reaches level Y and rescue the princess they can repeat this process.

But this is a very mystical trap and it is not guaranteed that even if someone is good at mathematics and jumping they will be able to rescue the princess.

Now, you have to find out if Zrog can rescue the princess from this trap, and if he does then what is the minimum number of jumps he need make to reach level Y if he starts from level X .

Input

The first line of input contains an integer T ($1 \leq T \leq 500$), the number of test cases.

The next line will contain two integers X ($1 \leq X \leq 100$) and Y ($1 \leq Y \leq 40000$).

Output

For each test case print the case number and the minimum number of jumps made to rescue the princess. It Zrog could not rescue the princess then print -1.

Example

standard input	standard output
2	Case 1: 2
6 12	Case 2: -1
6 13	

Note

In case 1, from 6 we can jump to $(6 + 2 = 8)$ or $(6 + 3 = 9)$, from 8 we can jump to $(8 + 2 = 10)$, from 9 we can jump to $(9 + 3 = 12)$, from 10 we can jump to $(10 + 2 = 12)$ or $(10 + 5 = 15)$. We can reach 12 in two different ways, if we first go to 9 and then 12 it requires only 2 jumps, but if we first go to 8, then 10 and lastly 12 it requires 3 jumps. So the answer is 2.