**Number Game**

Robert has come up with a fun game to quiz his brother’s math skills! The rules are simple. You are given a number and you are tasked with the following:

* If the number is even, you divide it by 2.
* If the number is odd, you can either subtract or add by 1.

You continue this until the number has reached 1. Do you think you can find the minimum number of times you have to do one of these operations?

**Input:** The first line of input contains **T**, the number of test cases. The next **T** lines each contain one integer, which you will use to start that game with.

**Output:** For each test case, you will output “CASE #(case number): “ followed by the minimum number of steps it takes to reach 1.

**Example Input:**

2

8

7

**Example Output:**

CASE #1: 3

CASE #2: 4

**Explanation:** For the first test case, the minimum number of steps is as follows:

8 -> 4 -> 2 -> 1

In the second test case, there are two solutions: 7 -> 8 -> 4 -> 2 -> 1 OR 7 -> 6 -> 3 -> 2 -> 1