1038 – Race to 1 Again

Rimi learned a new thing about integers, which is - any positive integer greater than **1** can be divided by its divisors. So, he is now playing with this property. He selects a number **N**. And he calls this **D**.

In each turn he randomly chooses a divisor of **D (1 to D)**. Then he divides **D** by the number to obtain new **D**. He repeats this procedure until **D** becomes **1**. What is the expected number of moves required for **N** to become **1**.

Input

Input starts with an integer **T (≤ 10000)**, denoting the number of test cases.

Each case begins with an integer **N (1 ≤ N ≤ 10^5)**.

Output

For each case of input you have to print the case number and the expected value. Errors less than **10^{-6}** will be ignored.

Sample Input	Output for Sample Input
3 1 2 50	Case 1: 0 Case 2: 2.00 Case 3: 3.0333333333