

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** ($1 \leq N \leq 10^5$).

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	Case 1: 0
1	Case 2: 2.00
2	Case 3: 3.0333333333
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