

Problem L. Lowest Terms Fractions

Source file name: L.c, L.cpp, L.java
Input: Standard
Output: Standard
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Mr. Homft's today lecture is about fractions. Fractions are the numbers that describes the *ratio* between values. For example, the *Golden Ratio* is described by the fraction $\frac{fib(n+1)}{fib(n)}$, which tends to be 1.61803. Note that $fib(n)$ is the n^{th} term of fibonnaci's sequence.

Mr. Homft explained also the types of fraction there are. The proper fractions are the ones of the form $\frac{a}{b}$ where $a < b$, for example $\frac{3}{4}$, $\frac{5}{7}$ and $\frac{1}{8}$ are proper fractions. Improper fractions are the ones that are not proper fractions or the ones where $a \geq b$, like $\frac{6}{5}$ or $\frac{8}{7}$.

After explaining all that, he mentioned that a good mathematician always simplifies the fractions he writes, for example, $\frac{4}{8}$ should never be written, because it can be simplified into $\frac{1}{2}$, these fractions are known as irreducible fractions or lowest terms fractions.

After all that was explained he wrote the homework:

Given a number n , how many fractions of the form $\frac{x}{n}$ are there which cannot be simplified, and what is their sum?

Input

The input starts with a line containing a single integer T the number of test cases. Each of the next t lines contains a single number n .

- $1 \leq T \leq 10^4$
- $2 \leq N \leq 10^9$

Output

Your program should output a line per test case with two numbers separated by a space, the first one being the number of lowest terms fractions of the form $\frac{x}{n}$, the second one the sum of these fractions rounded to 4 digits.

Example

Input	Output
4	1 0.5000
2	2 1.0000
3	2 1.0000
4	4 2.0000
5	

Explanation

In the first test case there is only one lowest term fraction on the form $\frac{x}{n}$ being $\frac{1}{2}$, the sum is then $\frac{1}{2} = 0.5000$. For the last test case there are 4 lowest terms fractions: $\frac{1}{5}$, $\frac{2}{5}$, $\frac{3}{5}$ and $\frac{4}{5}$ and their sum is $\frac{1}{5} + \frac{2}{5} + \frac{3}{5} + \frac{4}{5} = \frac{10}{5} = 2$