Fantasy

He woke up to the cold, dim lighting of the cell. The air was heavy, as if it had been locked here for centuries. Kaloyan groaned confused, tried to stand, but his body felt strange—unnatural, as if he wasn't quite sure where his limbs began. The sound of heavy footsteps echoed in the corridor, and before he could understand what was happening, two tall figures appeared before his cell. They wore heavy armor that glinted under the torchlight, but it wasn't the metal that caught his attention—it was their heads, shaped like those of lizards, with sharp snouts, tongues flicking out, and cold, reptilian eyes that studied him with unsettling intelligence. One of the guards spoke in a hissing, rough voice, but Kaloyan could understand the words. They weren't human, but he didn't think he was either.

Tied with a rope, Kaloyan was dragged through winding tunnels lit by strange bioluminescent mushrooms, the walls covered in moisture and the smell of earth. Eventually, they emerged into a massive open arena, surrounded by a crowd of creatures, each with the head of a different animal—falcons, wolves, snakes, and many more. His heart pounded in his chest as they tied him to a large stone pillar, the cold surface searing into his skin. Around him, he saw other monsters bound—hybrids with frog mouths, elephant ears, and strangely human eyes. Was this what he looked like as well? One lizard-like guard leaned close and whispered darkly, "Fight… or die." Low growls echoed from the crowd and Kaloyan's gaze met the wild gleam of the strange audience's eyes.

Then he realized that in this world, battles were not fought with the clash of swords, but with solving mathematical problems. The guards handed each fighter a sheet of paper containing Q fractions, each with up to 6 digits after the decimal point. The goal of each fighter was to express each fraction in the form P/Q, where P and Q are natural numbers smaller than 350 000. Some of his opponents were already handing in their answers, and Kaloyan noticed that the guards were checking whether the first 6 digits of the fraction matched P/Q after rounding at the 7-th digit.

You are given the list of Q fractions, each with up to 6 digits after the decimal point. For each fraction find two natural numbers smaller than 350 000 such that, after rounding at the 7-th digit, P/Q has the same first 6 digits after the decimal point.

Input

The first line of the file **fantasy.in** contains Q – the amount of fractions given to Kaloyan. For each of the next Q lines: line i+1 contains the whole number a_i, which corresponds to the fraction $\frac{a_i}{10^6}$.

Output

The file **fantasy.out** must contain Q lines. On line i print two numbers: P_i and Q_i, the answer for fraction i. The output is considered correct if for each fraction, the first 6 digits after the decimal point match those of P/Q after rounding at the 7th digit, and when P and Q are natural numbers smaller than 350 000.

Fantasy

2024/2025 SEASON – FOURTH ROUND

Constraints

$1 \leq Q \leq 10^5$

$3 \leq a_i \leq 999\ 997$

Time Limit: 0.2 sec.

Memory Limit: 256 MB.

Sample Test

Input (fantasy.in)	Output (fantasy.out)
5	1 2
500000	168883 271759
621444	233331 349997
666666	65169 137843
472777	90001 100001
900001	

Sample Explanation

The exact values of the 5 fractions with 20 digits after the decimal point are:

0.500000**0**0000000000000
0.62144**0**0001471888917
0.666665**7**1427755094703
0.472776**9**9992019905917
0.900000**9**9999000005013

The seventh digits are shown in **bold**. Consequently, the last 3 numbers are rounded up and become correct. Notice that giving '1 3' as the answer for 0.666666 would be incorrect, because that fraction is rounded up to 0.666667.

These are not all the numbers that give the correct answer for the test. The following are also correct:
150462 300924 for 0.5,
152637 322852 for 0.472777, as well as many others.