



Cosinus

Time limit: 2500 ms
Memory limit: 256 MB

Given an angle a , find the smallest positive integer n such that $|\cos(n \cdot a)|$ is minimal.

Standard input

The input contains a single integer T on the first line, the number of test cases.

Each of the next T lines contains a floating point number a which stands for the angle (in degrees).

Standard output

For each test case, output n which solves the problem.

Constraints and notes

- $1 \leq T \leq 40$
- $-180 \leq a < 180$ and a is given in decimal real number with no more than 10^3 digits

Input	Output	Explanation
<div> <div>4</div> <div>90</div> <div>27</div> <div>16</div> <div>88.817841970012523233890533447</div> <div> <div></div> <div></div> </div> </div>	<div> <div>1</div> <div>10</div> <div>17</div> <div>154618822656</div> </div>	<ul style="list-style-type: none"> • Test case 1: $\cos(1 \cdot a) = 0$, and 1 is the smallest positive integer, so clearly the answer is 1. • Test case 2: $\cos(10 \cdot a) = 0$ and 10 is the smallest such number. • Test case 3: There is no solution for $\cos(n \cdot a) = 0$ and $n = 17$ gives $\cos(272)$ which is the smallest $\cos(n \cdot a)$ • Test case 4: $n = 154618822656$ is the smallest number such that $\cos(n \cdot a) = 0$.