

Use of Function Arctan

It's easy to know that $\arctan(1/2)+\arctan(1/3)=\arctan(1)$. Given number A, write a program to calculate the minimum sum B+C. A,B and C are all positive integers and satisfy the equation below:

$$\arctan(1/A)=\arctan(1/B)+\arctan(1/C)$$

Input

The first line contains a integer number T(about 1000). T lines follow,each contains a single integer A, $1 \leq A \leq 60000$.

Output

T lines,each contains a single integer which denotes to the minimum sum B+C.

Example

Sample input:

1
1

Sample output:

5

Added some new test data.