

5 Big Booms

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output

points: 100 · problem code: 5bigbooms · author: Parsa

Parsa is tired of FIT1047. The FIT1047 textbook has n pages. Parsa decides to determine the average BOOM Power produced when closing the book quickly and forcefully.

Parsa randomly opens the book to a page, with each page being equally likely to be selected. If the book is opened to a certain page, the BOOM Power is equal to the smaller number of pages on either side of the book (this count can range from 0 to n). Given the number of sheets in Parsa's book, calculate the expected BOOM Power. In other words, the expected BOOM Power is given by:

$$\frac{\sum_{i=0}^n \min(i, n-i)}{n+1}$$

where $\min(a, b)$ is the smaller value of a and b .

Input

The only line of input contains n which is the number of pages in Parsa's book.

Output

Print the expected BOOM Power of the book. Any answer with absolute error not exceeding 10^{-6} will be accepted.

Constraints

- $1 \leq n \leq 2 \times 10^9$

Example 1

Input

3

Output

0.500000

Example 2

Input

21

Output

5.000000