

# 1776. Anniversary Firework

Time limit: 1.0 second

Memory limit: 64 MB

Denis has to prepare the Ural State University 90th anniversary firework. He bought  $n$  rockets and started to think of the way he should launch them. After a pair of sleepless nights he invented the following algorithm.

All  $n$  rockets are placed on the surface in a single line. The interval between two consecutive salvos is ten seconds. The leftmost and the rightmost rocket are launched in the first salvo. After  $i$  salvos are fired, all non-empty segments between two neighboring launched rockets are considered. One rocket is chosen randomly and uniformly at each of these segments. All chosen rockets are launched in the  $(i + 1)$ -st salvo. Algorithm runs until all rockets are launched.

Calculate the average duration in seconds of such a firework.

## Input

The only input line contains an integer  $n$  ( $3 \leq n \leq 400$ ), which is the number of rockets bought by Denis.

## Output

Output the expected duration of the firework in seconds, with absolute or relative error not exceeding  $10^{-6}$ .

## Sample

input	output
5	26.666666666666

## Notes

First, the rockets with numbers 1 and 5 are launched. 10 seconds later the rocket 3 is launched with probability  $1/3$ ; in that case, 10 more seconds later the rockets 2 and 4 are launched, and the firework is over after 20 seconds. In case the rocket 2 or rocket 4 is launched in the second salvo (this happens with probability  $2/3$ ), the firework is over after 30 seconds.

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**Problem Source:** XV Open USU Championship