

# Coincidence

Toriel is planning to create a game with prize. In this game, there are  $N$  players and  $N$  boxes each containing a piece of paper with a player's name written on it. Each player has a unique name and each box contains a different name. There are at most 1000 players playing.

Then, each player take 1 box at random such that every player got a different box. The more player got a box containing their name, the bigger the prize is. To prepare the prize, Toriel needs your help to calculate the expected number of player to get their own name.

## Input.

First line is  $T$ , number of games ( $T \leq 1000$ ). Next  $T$  lines each contains  $N$  for each game.

## Output

For each game, output the expected number of players to get the box containing their own name. Output exactly 6 digits after decimal points.

## Example

### Input:

1  
1

### Output:

1.000000