

# Connect the country



We have a country containing  $N$  cities. Each day we choose 2 cities such that there is no road between them and build a road between them. We choose each pair of nonadjacent cities with equal probability. Let  $X$  be the number of days before we obtain a connected country. What is the expected value of  $X$ ? Output the integer part of answer.

## Input Format

First line of input as an integer  $N$ .

## Constraints

- $N \leq 30$

## Output Format

Print an integer being the result of the test.

## Sample Input 0

3

## Sample Output 0

2

## Explanation 0

In the first example, first two roads are sufficient for connecting the cities so the answer would be 2.

## Sample Input 1

4

## Sample Output 1

3

## Explanation 1

In the second example if the first three roads of the country are edges of a triangle, then we need a fourth road to make the country connected, otherwise the country would be connected with first three roads. The probability of the former situation is  $4/20$  (number of triple of roads that make a triangle divided by number of ways we can choose 3 different roads), and the probability of later situation is  $16/20$ . So the result would be  $4/20 \cdot 4 + 16/20 \cdot 3 = 3.2$  and since you have to print only the integer part as output, print 3