



# Problem J

## Triangulation

Time Limit: 1 Second

A regular  $n$ -sided polygon  $P$  can be partitioned into  $n - 2$  triangles by adding non-crossing line segments connecting two vertices of  $P$ . For example, a square can be partitioned into two triangles, a regular pentagon can be partitioned into three triangles, and a regular hexagon can be partitioned into four triangles. The resulting set of triangles is called a *triangulation* of  $P$ . There exist two or more triangulations of  $P$  if  $n$  is greater than three.

Once a triangulation  $T$  of  $P$  is chosen, the distance between two triangles  $a$  and  $b$  in  $T$  is defined to be the number of hops crossing the borders of two adjacent triangles when you travel from  $a$  to  $b$ . Note that you must stay inside the polygon  $P$  at any time during this travel, that is, it is not allowed to hop crossing the border of  $P$ .

For example, the distance of  $a$  and  $d$  in the triangulation shown in Figure J.1 is three since the triangles,  $a$ ,  $b$ ,  $c$ , and  $d$ , should be visited to travel from  $a$  to  $d$ , and you have to hop three times crossing borders between triangles.

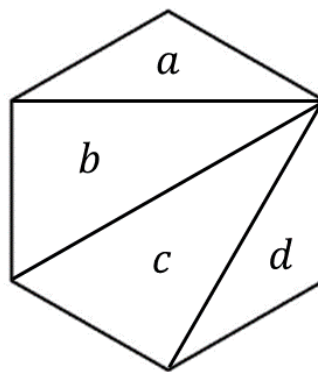


Figure J.1 A triangulation of a regular hexagon

The diameter of a triangulation  $T$  is the maximum of the distances between all pairs of triangles in  $T$ . Write a program to find a triangulation of a regular  $n$ -sided polygon  $P$  whose diameter is the minimum over all possible triangulations and print its diameter.

### Input

Your program is to read from standard input. The input starts with a line containing  $n$  ( $3 \leq n \leq 1,000,000$ ), where  $n$  is the number of sides of the regular  $n$ -sided polygon.

### Output

Your program is to write to standard output. Print exactly one line. The line should contain the minimum diameter of the triangulations of a regular  $n$ -sided polygon.

The following shows sample input and output for three test cases.

<b>Sample Input 1</b>	<b>Output for the Sample Input 1</b>
3	0

<b>Sample Input 2</b>	<b>Output for the Sample Input 2</b>
4	1

<b>Sample Input 3</b>	<b>Output for the Sample Input 3</b>
6	2