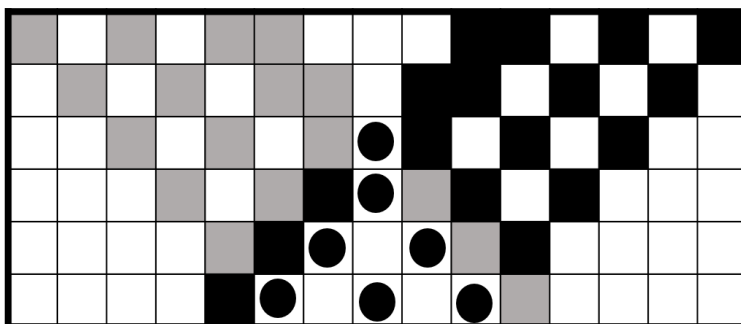


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PROBLEM H — LIMIT 1 SECOND

Repeating Goldbachs



The Goldbach Conjecture states that any even number $x \geq 4$ can be expressed as the sum of two primes. It can be verified that the conjecture is true for all $x \leq 10^6$.

Define a *Goldbach step* as taking x ($4 \leq x \leq 10^6$), finding primes p and q (with $p \leq q$) that sum to x , and replacing x with $q - p$. If there are multiple pairs of primes which sum to x , we take the pair with the largest difference. That difference must be even and less than x . Therefore, we can repeat more Goldbach steps, until we can reach a number less than 4.

Given x , find how many Goldbach steps it takes until reaching a number less than 4.

Input

The input will consist of a single integer x ($4 \leq x \leq 10^6$).

Output

Print, on a single line, the number of Goldbach steps it takes to reach a number less than 4.

Sample Input and Output

20	3
30	4
40	5

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50	6
60	7
70	8