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# Collecting the balls

Problem

Submissions

Leaderboard

There are 'n' number of balls in a container. Mr. Sharma and Singh want to take balls out from the container. At each step, Mr. Sharma took 'k' balls out of the box and Mr. Singh took one-tenth of the remaining balls. Suppose there are 29 balls at the moment and  $k=4$ . Then, Mr. Sharma will take 4 balls and Mr. Singh will take 2 balls ( $29-4 = 25$ ;  $25/10 = 2$ ). If there are less than 'k' balls remaining at some moment, then Mr. Sharma will take all the balls which will get the container empty. The process will last until the container becomes empty. Your task is to choose minimal 'k' for Mr. Sharma such that Mr. Sharma will take at least half of the balls from the container.

## Input Format

The Only line of input contains a single integer 'n'.

## Constraints

$1 \leq n \leq 10^{18}$  Time Limit: 1 second

## Output Format

Print a single integer denoting the minimal value of 'k'.

## Sample Input 0

68

## Sample Output 0

3

## Explanation 0

68-3 = 65; 65/10 = 6; 65-6 = 59 59-3 = 56; 56/10 = 5; 56-5 = 51 51-3 = 48; 48/10 = 4; 48-4 = 44 44-3 = 41; 41/10 = 4; 41-4 = 37 ..... 6-3 = 3; 3/10 = 0; 3-0 = 3 3-3 = 0; 0/10 = 0; 0-0 = 0



Contest ends in **13 minutes**



Submissions: **18**

Max Score: 30

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C++



```
1 #include <cmath>
2 #include <cstdio>
3 #include <vector>
4 #include <iostream>
5 #include <algorithm>
```

```
6 using namespace std;
7 bool find(long c,long k)
8 {
9     long sum=0,n=c;
10    while(n>0)
11    {
12        long a=min(k,n);
13        sum+=a;
14        n-=a;
15        n-=n/10;
16    }
17    return 2*sum>=c;
18 }
19 long bsearch(long n)
20 {
21     long ret=n/2,l=1,h=n;
22     while(l<=h)
23     {
24         long mid=(l+h)/2;
25         if(find(n,mid))
26         {
27             ret=mid;
28             h=mid-1;
29         }
30         else l=mid+1;
31     }
32     return ret;
33 }
34
35 int main() {
36     long n;
37     cin>>n;
38     cout<<bsearch(n);
39     return 0;
40 }
41
```

 [Upload Code as File](#) ☐ [Test against custom input](#)

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Testcase 0 

**Congratulations, you passed the sample test case.**

Click the **Submit Code** button to run your code against all the test cases.

**Input (stdin)**

68

**Your Output (stdout)**

3

**Expected Output**

3

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