Have It & Eat It

November 2023
C++ — 2 sec — 512 MB

November is the month of cake at Susie's Sweetest Sweet Shop. Susie has baked many cakes in her confectionary career: red velvet, coffee & walnut, black forest gateaux, New York cheesecake, carrot, lemon drizzle, triple chocolate, pound, honey, marble, angel, victoria sponge, pineapple upside down, battenberg... the list goes on and on.

This year, Susie has baked a *very* special cake; so special, in fact, that she wants to share it with as many people as possible. Susie has sculpted a perfect cube of smooth cakey crumbs, that somehow epitomises everything that makes a cake a *cake*.

Susie's cake-cake (as she has christened it) is extremely delicate and so should be cut as few times as possible. Susie wants to use her brand new laser-cake-cutter that she recently purchased at great expense. This machine cuts a perfect plane through the cake at any angle, passing through any three points.

Susie wants to determine the minimum number of cuts that she needs to make in order to provide all her customers with a slice of delicious cake-cake. Note that the slices do not need to be of equal volume.

INPUT You will be given a single integer, **n**, denoting the number of customers wanting a slice of Susie's cake-cake.

$1 \leq \mathbf{n} \leq 2^{63}$

OUTPUT Output a single integer, *s*, giving the minimum number of cuts that Susie needs to make in order to produce n slices.

SAMPLE For example, suppose there are 8 customers. 2 cuts can make at most 4 slices, whilst 3 cuts can make 8. Thus, Susie must make a minimum of 3 cuts to give a slice to each customer.

INPUT	OUTPUT
7	3
55	7
4321	30