

Problem ID: hyperilluminati

Once again the time dawns to demonstrate the sheer power of the Illuminati. To do so, it was decided to build an n -dimensional hyper-step pyramid using n -dimensional *blocks*:

- All the steps of the pyramid are n -dimensional hyper-cuboids.
- Every step has a height of exactly 1 *block* in the n -th dimension.
- The pyramid has s steps and the base step is s *blocks* long in every other of the $n - 1$ dimensions.
- Every subsequent higher step is 1 *block* shorter in each of the $n - 1$ dimensions than the step below it.
- The top step is exactly 1 *block*.

To prove their might even further the Illuminati leaders have decided to add two more requirements:

- n must be at least 3.
- The number of *blocks* used to build the pyramid must be a meaningful number.

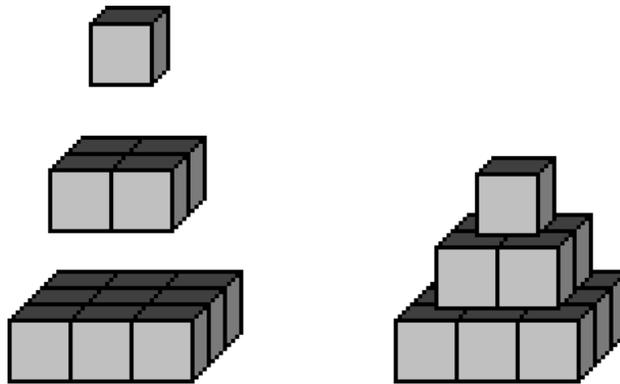


Figure 1: A 3-dimensional hyper pyramid with 3 steps consisting of 14 *blocks* in total.

Input

The input consists of:

- one line with a single integer m ($1 \leq m \leq 10^{16}$). This integer is the meaningful number the leaders have chosen.

Output

If a hyper-step pyramid matching all the requirements exists, output a single line with two integers n and s , the dimension of the pyramid and its number of steps. If none exists, output `impossible`. If multiple solutions exist, any will be accepted.

Sample Input 1

14

Sample Output 1

3 3

Sample Input 2

9

Sample Output 2

4 2

Sample Input 3

24

Sample Output 3

impossible

Sample Input 4

9134731356568978

Sample Output 4

5 2147