Problem H: Hyper Illuminati

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.

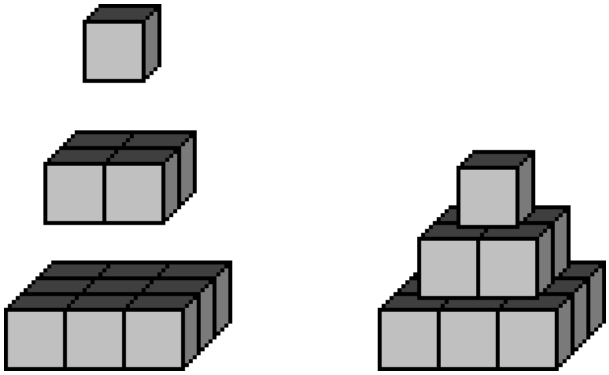


Figure H.1: A 3-dimensional hyper pyramid with 3 steps consisting of 14 *blocks* in total.

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
```