



## Problem of the Week

### Problem D

### Machine Math

A positive integer  $p$  is input into a machine. If  $p$  is odd, the machine outputs the integer  $p + 5$ . If  $p$  is even, the machine outputs the integer  $p + 11$ . This process can be repeated using each successive output as the next input. For example, if the input is  $p = 1$  and the machine is used three times, the final output is 22.

If the input is  $p = 2023$  and the machine is used 101 times, find the final output.

