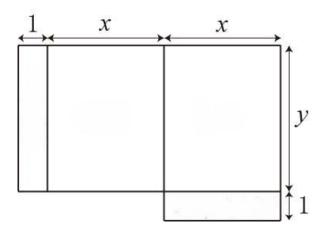
# Extra Credit

## Renting an Apartment

#### 1 Description

Rosé is renting an apartment at Penn State. The area of the apartment room is 2xy + x + y, as shown in the figure below. (x and y are positive integers.)



The Penn State catalog lists apartments in ascending order of area, but some of them have impossible sizes (the size cannot be made with any positive integers x and y). If Rosé says she wants to rent an apartment of this size, the Penn State rental agent will yell, "Bam!" and take a commission.

Given the area of apartments listed in the Penn State catalog, write a program to find the number of apartments of an impossible size.

### 2 Input

The first line contains the number of apartment areas, N. The following N lines contain the areas  $a_i$  in the order listed in the catalog.

```
For subtask 1 (20 points), N = 100,000, a_i \le 1,000,000
For subtask 2 (30 points), N = 1,000, a_i \le 2^{31} - 1
For subtask 3 (50 points), N = 100,000, a_i \le 2^{31} - 1
```

Since there is a time limit to the program execution time, implementing the program with an inefficient algorithm will not get points due to timeout for some subtasks.

#### 3 Output

On the first line, print the number of apartment areas that cannot exist.

### 4 Sample

Input	Output
10	2
4	
7	
9	
10	
12	
13	
16	
17	
19	
20	

Given ten areas, the areas 9 and 20 cannot exist. The other eight areas can be expressed as 2xy + x + y where x and y are positive integers. Therefore, the answer is 2.

### 5 Grading

Your code must use **standard IO**; it must read the input from stdin and print the output to stdout. If you attempt File IO, you may not get the points. You can submit your source code multiple times, and your score will be shown each time you submit it. There is a time limit of **1000ms**, and if your code exceeds this during the test, you will not get the points. There is no tight memory limit, but you will not be able to score if you use more than about 700 MiB of memory. The score is divided into three subtasks, and you must pass all test cases in each subtask to get the score. In other words, if you fail to pass even one of the test cases in the subtask, you will not get the score for the entire subtask.

#### 6 Submission

Submit your Python code, the name of which should be "rent.py" on Gradescope. The due date for this assignment is December 6, 2024, 11:59 P.M.