Knight Moves

A knight is located at the (black) origin of an infinite chessboard. Let *f(n)* define the number of black squares the knight can reach after making exactly *n* moves. Given *n* ($0 <= n <= 10^8$), output *f(n)*.

Input

The first line of the input contains a single integer T, the number of test cases ($1 <= T <= 10^6$). Each test case consists of a single positive integer *n*.

Output

For each value of *n* in the input, print a single line containing.

Example

Input:
```
2
0
1
```

Output:
```
1
0
```