

# Project Euler #94: Almost equilateral triangles

This problem is a programming version of [Problem 94](#) from [projecteuler.net](#)

It is easily proved that no equilateral triangle exists with integral length sides and integral area. However, the *almost equilateral triangle*  $5 - 5 - 6$  has an area of **12** square units.

We shall define an *almost equilateral triangle* to be a triangle for which two sides are equal and the third differs by no more than one unit.

Find the sum of the perimeters of all *almost equilateral triangles* with integral side lengths and area and whose perimeters do not exceed  $N$ .

## Input Format

First line contains  $T$ , denoting the number of testcases.  
Next  $T$  lines contains  $N$ .

## Constraints

$$2 \leq T \leq 10^5$$
$$15 \leq N \leq 10^{18}$$

## Output Format

Output  $T$  lines corresponding to  $T$  test cases.

## Sample Input

```
2
17
51
```

## Sample Output

```
16
66
```

## Explanation

For first test case we get perimeter  $16 - (5 - 5 - 6)$ .

Second test case there is another triangle  $16 - 17 - 17$  whose area is **120** units.