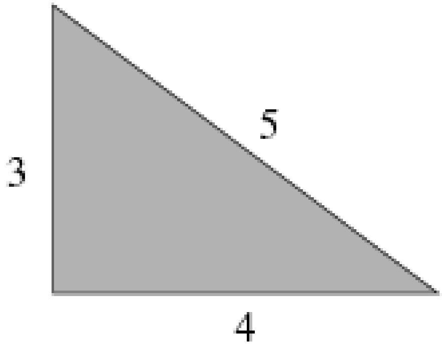
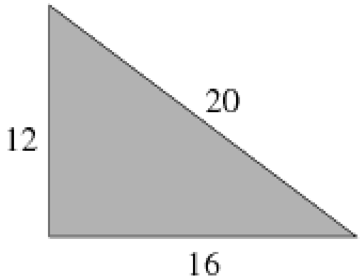
The famous Pythagorean theorem states that a right triangle, having side lengths A and B and hypotenuse length C, satisfies the formula

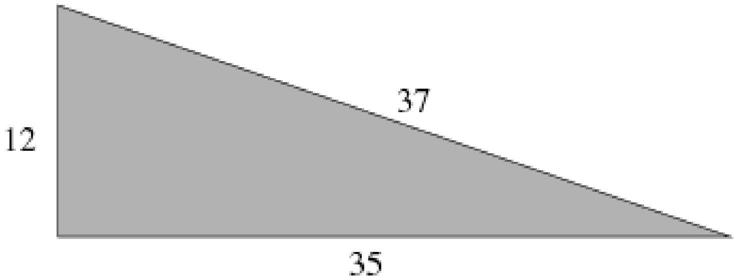
$$A^2 + B^2 = C^2$$

It is also well known that there exist some right triangles in which all three side lengths are integral, such as the classic:



Further examples, both having $A = 12$, are the following:





The question of the day is, given a fixed integer value for A, how many distinct integers $B > A$ exist such that the hypotenuse length C is integral?

Input

Each line contains a single integer A, such that $2 \leq A < 1048576 = 2^{20}$. The end of the input is designated by a line containing the value 0.

Output

For each value of A, output the number of integers $B > A$ such that a right triangle having side lengths A and B has a hypotenuse with integral length.

A Hint and a Warning:

Our hint is that you need not consider any value for B that is greater than $(A^2 - 1)/2$, because for any such right triangle, hypotenuse C satisfies $B < C < B + 1$, and thus cannot have integral length.

Our warning is that for values of $A \approx 2^{20}$, there could be solutions with $B \approx 2^{39}$, and thus values of $C^2 > B^2 \approx 2^{78}$.

You can guarantee yourself 64-bit integer calculations by using the type `long long` in C++ or `long` in Java. But neither of those types will allow you to accurately calculate the value of C^2 for such an extreme case. (Which is, after all, what makes this **Pythagoras's *revenge***!)

Sample Input

```
3
12
2
1048574
1048575
0
```

Sample Output

```
1
2
0
1
175
```