Triangular number

A *triangular number* numbers the objects that can form an equilateral triangle, as shown in the diagram in Figure 1. The nth triangle number is the number of dots in a triangle with n dots on a side; it is the sum of the n natural numbers from 1 to n. The sequence of triangular numbers is:

$$1, 3, 6, 10, 15, 21, 28, 36, 45, 55, ...$$

The triangular numbers are given by the following explicit formula:

$$T_n = \sum_{k=1}^{n} k$$

Your team is to write a program that will, given an integer value, determine if it is a triangular number. If the given value is a triangular number, determine the number of dots on a side.

Input
Input to your program will be a series of lines. Each line contains an integer N, 0 < N < 1,000,000 with no leading zeroes or spaces and no trailing spaces. Input ends with a line of 0, which needs no output.

Output
Your program is to determine if each integer N is a triangular number, If it is, print a line containing the number of dots on a side. If it is not a triangular number, print a line containing the string "bad". In both cases print the answer with no leading zeroes or whitespace and no trailing whitespace.
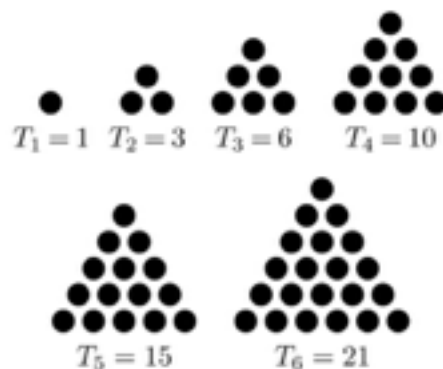

$T_1 = 1$ $T_2 = 3$ $T_3 = 6$ $T_4 = 10$

$T_5 = 15$ $T_6 = 21$

Figure 1. Diagram of the first six triangular numbers.

Sample Input/Output

Input	Output
55 1 587 499500 0	10 1 bad 999