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1  /* Problem 6--I Will Write All Of My Lines
2     Oh gosh, don't try all possible combinations.  Use dynamic
3     programming to work out a table of answers.  Look at the numbers that
4     differ from yours by a perfect square and see which is the best
5     choice!
6
7     At this point, I'll point out that Lagrange's four-square theorem
8     stipulates that Bart will NEVER need more than four goes with his
9     device.  All positive integers are expressible as a sum of four or
10    fewer perfect squares. */
11
12    import java.io.*;
13    import java.util.*;
14
15    public class prob6 {
16
17        private static Scanner in;
18        private static PrintWriter out;
19        private static int cs;
20        private static int[] chalk;
21
22        public static void main (String[] args) throws Exception {
23
24            in = new Scanner (new File ("prob6.in"));
25            out = new PrintWriter ("prob6.out");
26            cs = 1;
27            chalk = new int[1000001];
28            Process ();
29            while (true) {
30                int sz = in.nextInt();
31                if (sz==0) break;
32                out.printf (
33                    "Case %d: Bart can write %d lines in %d iterations.\r\n\r\n",
34                    cs++,sz,chalk[sz]);
35            }
36            in.close ();
37            out.close ();
38        }
39
40        public static void Process () {
41
42            chalk[0] = 0;
43            for (int i=1; i < chalk.length; i++) {
44                chalk[i] = i;
45                for (int j=1; i >= j*j; j++)
46                    if (chalk[i-j*j]+1 < chalk[i]) chalk[i] = chalk[i-j*j]+1;
47            }
48        }
49    }
50

```