Charles Frédéric Gros (CFG) has decided to disprove the Riemann hypothesis numerically. For a given integer $D > 0$ of the form $4k+3$ and free of square prime factors, this amounts to computing the cardinality $h(D)$ of the set

$$C(D) \stackrel{\text{def}}{=} \{(a,b,c) | b^2 - 4ac = -D, |b| \le a \le c, \text{ where } b \ge 0 \text{ if } a = c \text{ or } a = |b|.$$

(Where a, b, c are integers.)

For instance, $C(3) = \{(1,1,1)\}$, $C(15) = \{(1,1,4),(2,1,2)\}$. Note that $D = 75$ is not eligible, since $75 = 3 \cdot 5^2$. Non-eligible numbers in the interval $[3,103]$ are $\{27, 63, 75, 99\}$.

CFG is interested in values of D for which $h(D)/\sqrt{D}$ is large. Your role is to write a program to help CFG finding these record numbers.

Input

You are given an input file consisting of several test cases, each of them consists of three integers on a single line:

$Dmin\ Dmax\ K$

where $3 \le Dmin \le Dmax < 2^{31}$ and are of the form $4k+3$. Moreover, $Dmax - Dmin \le 10^6$ and $K < 10^4$. For such values, one has $h(D) < 2^{31}$.

Output

For each test case, your program must determine the eligible values of D in the interval $[Dmin, Dmax]$ for which

$$f(D) = \left\lfloor (1000\ h(D)) / \lfloor \sqrt{D} \rfloor \right\rfloor \ge K.$$

The output will consist of lines:

$D\ h\ f$

where D is a record number, $h = h(D)$ and $f = f(D)$.

If no answer is found, then output a line containing the word '`empty`'.

Write a blank line to separate the output of two consecutive cases.

Sample Input

```
3 103 0
27 27 10
```

Sample Output

```
3 1 1000
7 1 500
11 1 333
15 2 666
19 1 250
23 3 750
31 3 600
35 2 400
39 4 666
43 1 166
47 5 833
51 2 285
55 4 571
59 3 428
67 1 125
71 7 875
79 5 625
83 3 333
87 6 666
91 2 222
95 8 888
103 5 500

empty
```