Project Euler #110: Diophantine reciprocals II

This problem is a programming version of Problem 110 from projecteuler.net

In the following equation $x, y, \text{and } n$ are positive integers.

$$\frac{1}{x} + \frac{1}{y} = \frac{1}{n}$$

It can be verified that when n = 1260 there are 113 distinct solutions and this is the least value of n for which the total number of distinct solutions exceeds one hundred.

What is the least value of n for which the number of distinct solutions $\geq X$?

Input Format

A single line containing one number X, $2 \leq X \leq 10^{13}$

Output Format

The number n ¯ the answer to a problem.

Sample Input

```
113
```

Sample Output

```
1260
```