

Project Euler #110: Diophantine reciprocals II

This problem is a programming version of [Problem 110](#) from [projecteuler.net](#)

In the following equation x, y , 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