

# Pythagorean triplets - MathGames

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**Difficulty:** ★ ★ ★ ☆ ☆

**Key words:** Group theory, Number theory

A Pythagorean triplet is a set of 3 numbers  $a, b, c \in \mathbb{N}$ , with the property that  $a^2 + b^2 = c^2$ . A pythagorean triplet is called primitive if  $a, b, c$  are co-prime, i.e. if they have no common factors. Your task is to find  $k$  unique primitive pythagorean triplets, where  $n < a, b, c < 2n^2$  for some given  $n, k$ .

## Input

- A positive integer  $N \leq 10^{14}$
- A positive integer  $k \leq 10000$

## Output

- $k$  lines containing  $a, b, c$  separated by a space.

## Examples

Input	Output
10	143 24 145
2	119 120 169

Input	Output
1000	1008015 2008 1008017
4	1008007 6024 1008025
	1007991 10040 1008041
	1007967 14056 1008065