SquareDecomposer

My younger sister came back home from school with the following task: given a squared sheet of paper she has to cut it in pieces which, when assembled, give squares the sides of which form an increasing sequence of numbers. At the beginning it was lot of fun but little by little we were tired of seeing the pile of torn paper. So we decided to write a program that could help us and protects trees.

Task

Given a positive integral number n, return a strictly increasing sequence (array) of numbers, so that the sum of the squares is equal to n^2.

If there are multiple solutions (and there will be), return as far as possible the result with the largest possible values:

Examples

decompose(@11) must return [@1,@2,@4,@10]. Note that there are actually two ways to decompose 11^2, $11^2 = 121 = 1 + 4 + 16 + 100 = 1^2 + 2^2 + 4^2 + 10^2$ but don't return [2,6,9], since 9 is smaller than 10.

For decompose(@50) don't return [@1, @1, @4, @9, @49] but [@1, @3, @5, @8, @49] since [@1, @1, @4, @9, @49] doesn't form a strictly increasing sequence.

Note

Neither [n] nor [1,1,1,…,1] are valid solutions. If no valid solution exists, return nil.

The function "decompose" will take a positive NSNumber n and return the decomposition of $N = n^2$ as [x1 ... xk]
If n is negative, return nil as well.

Examples:
decompose 50 returns "1,3,5,8,49"
decompose 4 returns nil