

Problem L. Triangle

Input file: *standard input*
Output file: *standard output*
Time limit: 0.6 seconds
Memory limit: 512 mebibytes

You are given n segments of different integer lengths from 1 to c . Construct a nondegenerate triangle using three of them. Among all the triangles that can be constructed, choose one with the minimum area.

Input

The first line of input contains one integer T , the number of test cases.

Each test case consists of two lines.

The first line of each test case contains two integers n and c : the number of segments and the maximum possible length of the segment ($1 \leq n \leq 50\,000$, $n \leq c \leq 100\,000$).

The next line contains n different integers a_i , the lengths of the segments ($1 \leq a_i \leq c$).

The total sum of all n over all test cases does not exceed 50 000.

The total sum of all c over all test cases does not exceed 100 000.

Output

For each test case, print the minimum possible area of the triangle on a single line. If no nondegenerate triangles could be constructed, print -1 . Your answer must have an absolute error no more than 10^{-9} .

Example

standard input	standard output
4	-1
3 3	2.904737509655563
1 2 3	12.968712349342937
4 4	12.968712349342937
1 2 3 4	
3 11	
5 7 11	
6 11	
5 7 8 9 10 11	