

B. Vanya and Lanterns

time limit per test: 1 second

memory limit per test: 256 megabytes

input: standard input

output: standard output

Vanya walks late at night along a straight street of length l , lit by n lanterns. Consider the coordinate system with the beginning of the street corresponding to the point 0 , and its end corresponding to the point l . Then the i -th lantern is at the point a_i . The lantern lights all points of the street that are at the distance of at most d from it, where d is some positive number, common for all lanterns.

Vanya wonders: what is the minimum light radius d should the lanterns have to light the whole street?

Input

The first line contains two integers n, l ($1 \leq n \leq 1000, 1 \leq l \leq 10^9$) — the number of lanterns and the length of the street respectively.

The next line contains n integers a_i ($0 \leq a_i \leq l$). Multiple lanterns can be located at the same point. The lanterns may be located at the ends of the street.

Output

Print the minimum light radius d , needed to light the whole street. The answer will be considered correct if its absolute or relative error doesn't exceed 10^{-9} .

Examples

| input |
|-------------------------|
| 7 15 15 5 3 7 9 14 0 |
| output |
| 2.5000000000 |

| input |
|--------------|
| 2 5 2 5 |
| output |
| 2.0000000000 |

Note

Consider the second sample. At $d = 2$ the first lantern will light the segment $[0, 4]$ of the street, and the second lantern will light segment $[3, 5]$. Thus, the whole street will be lit.

Codeforces Round #280 (Div. 2)

Finished

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