```c
#include <stdio.h>
#include <stdlib.h>
#include <math.h>

float getGuess(int n){
    if(n < 4)
        return 2.0;
    float guess = 2.0; // The current guess
    float next = guess * 10; // The next guess
    while(1){
        if(next * next >= n){ // Hmm ... next guess is an overestimate
            if(next * next - n >= n - guess * guess)
                return guess; // In case of tie, return the smaller one
            else
                return next; // No point considering a bigger overestimate
        }
        guess = next;
        next = guess * 10;
    }
}

float heroRoot(int n, float e){
    float x = getGuess(n);
    printf("%0.3f\n", x);
    float y = n/x;
    while(1){
        float absv = (x - y) > 0 ? x - y : y - x;
        if (absv < e) // Wrap up - got required precision
            break;
        x = (x + y)/2;
        y = n/x;
    }
    return x;
}

int main(){
    int N;
    float eps;
    scanf("%d %f", &N, &eps);
    printf("%0.3f", heroRoot(N, eps));
    return 0;
}
```