C: Floating Rafts of Logs

Logs are to be tied together into a raft to be sent down the river to a mill. In an attempt to impress the miller, we wish to construct the widest possible raft by ordering the logs (all of the same length) in an optimal fashion. Logs are of different diameters. The idea is to lash the logs together with ropes so that each touches its neighbors and each sinks into the water freely according to its density. Your task is to determine the maximum width of the resulting raft measured from the front edge of the foremost log to the back edge of the hindmost extending log, as viewed by looking straight down on the raft.

Input

Input may consist of multiple cases. Each case begins on a new line beginning with the relative thickness of the logs ($0 < r.t. < 1$) that sinks below the water line, and the number of logs for the raft. Beginning with the next line and possibly continuing onto addition lines are the diameters of the logs. There will be no more than 100 logs. All values easily fit into a single precision number. Arbitrary white space may be used to delimit the values on a line. The last case is followed by a line containing a pair of 0 values.

Output

For each case, display the case number followed by the maximum width of the raft, formatted as in the sample. Round to the nearest hundredth. Use single spaces as delimiters.

Sample Input

```
0.50 10
5 2 9 2 1 6 2 3 8 2
0.50  2
100  1
0.95  2
100  1
0.00  0
```

Sample Output

```
Case 1: 40.00
Case 2: 101.00
Case 3: 100.00
```