

# Dart Throw

Pistol Pete, the neighborhood game dealer, has offered to let you play his newest game. Pete's going to let you throw a dart at his wall containing several targets. Depending on what target you hit, you will win a fabulous prize!

You've been practicing a game like this lately, and you figure it's right up your alley. You will hit the target you aim at with *prob* percent probability. When you miss the target you aim at, you will hit either of the adjacent targets with equal probability. Since the targets are arranged in a circular fashion, if you miss target 0, then you will either hit target 1 or target n-1, where n is the total number of targets. See example 0 for clarification.

Pete has given you a sequence of integers: *payout*, in which the i-th element corresponds to the payout of hitting target i. You will also be given *prob*, the percent probability your dart will hit the target you aim for. The total number of targets is equal to the number of elements in *payout*. Given this information, find and print a number: the average payout that you will get from Pete if you play optimally.

## Input Specification

The input will contain several test cases, each test cases will consist of two lines, the first will contain the *payout* sequence, the second will contain the given *prob*. You can assume the follow will be always true:

- *payout* will contain between 3 and 50 elements, inclusive.
- Each element of *payout* will be between 0 and 100, inclusive.
- *prob* will be between 0 and 100, inclusive.

## Output Specification

Print one line per test case with the answer, follow the format below. The result output must be truncated to five digits of precision

## Input Example

```
10 40 50
80
10 40 50
61
20 1 18 4 13 6 10 15 2 17 3 19 7 16 8 11 14 9 12 5
60
20 1 18 4 13 6 10 15 2 17 3 19 7 16 8 11 14 9 12 5
20
```

## Output Example

```
45.00000
40.25000
13.40000
15.40000
```