

Zen And His Crush

Zen has a Crush and is always fantasizing about her. He is so restless now, that he has decided to meet her and express his immense feelings about her. He fears a lot of being rejected that's why he wants to examine his luck. Zen has **N** biased coins where the probability of getting Head from i^{th} coin is P_i . His luck of being accepted is the probability of getting **exactly K** heads when N coins are tossed simultaneously.

Zen is weak in programming and asking for help. Can you help him to calculate his luck?

Input

First Line of the input file contains, **T**-number of test cases. ($1 \leq T \leq 100$)

Each test case followed by two integers, **N** and **K**. ($1 \leq N \leq 1000$ && $0 \leq K \leq N$)

Next line contains **N**-space separated real values, P_i .

Output

For each test case, you have to print desired output(up to **10** decimal places).

Example

Input:

```
1
3 2
0.0 0.5 1.0
```

Output:

```
0.5000000000
```