DMPG '16 B2 - Reward Reminiscence

Time limit: 2.0s **Memory limit:** 64M

After counting his money several hundred times, Bob's stress began melting away and his passion to become an expert in gathering intelligence was rekindled. In fact, Bob's inner potential was so great he attracted the attention of the **I**nternational **O**rganization of **I**ntelligence at the age of 13!

The IOI hosts an annual competition for post-baccalaureate students, with considerable monetary awards paid out to top-ranking contestants. If N represents the total number of contestants, and M represents the number of people possessing a **strictly greater** score than Bob, then Bob will take home $100\sqrt{N-M}$ dollars.

Bob was so passionate about the competitions themselves that he forgot to count his winnings. Help Bob determine his winnings for each contest!

Input Specification

The first line of the input contains a single integer T denoting the number of test cases to follow $(1 \leq T \leq 10)$.

Every test case consists of **exactly** 2 lines. The first line of each test case contains two space-separated integers: N, the total number of contestants $(2 \leq N \leq 25)$, and B, Bob's score during the competition $(1 \leq B \leq 10^4)$.

The second line of each case contains $N-1$ space-separated integers S_i $(1 \leq S_i \leq 10^4)$, representing the score of the i^{th} contestant in no particular order (excluding Bob, the N^{th} contestant).

Output Specification

Your program should output T lines, with each line containing the string `Bob wins $D at IOI!`, where D is the amount Bob wins at the competition, rounded to exactly two decimal places.

Sample Input

```
1
5 2399
2400 2400 2399 2399
```

Sample Output

```
Bob wins $173.21 at IOI!
```

Explanation

With his score of 2399, Bob manages to secure his spot behind only 2 people. As a result, he is awarded $100\sqrt{5-2} \approx \$173.21$.