



Time Remaining: 53min 55sec Rank: 1341 Score: 0 **Leiquan** | [Contest scoreboard](#) | [Sign out](#)

Round D APAC Test 2017

A. Vote

[B. Sitting](#)

[C. Codejamon Cipher](#)

[D. Stretch Rope](#)

[Ask a question](#)

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Submissions	
Vote	
5pt	Not attempted 1180/2325 users correct (51%)
8pt	Not attempted 1063 users attempted
Sitting	
9pt	Not attempted 401/1089 users correct (37%)
10pt	Not attempted 240 users attempted
Codejamon Cipher	
7pt	Not attempted 379/489 users correct (78%)
16pt	Not attempted 345 users attempted
Stretch Rope	
15pt	Not attempted 166/257 users correct (65%)
30pt	Not attempted 33 users attempted

Top Scores	
jinzhao	100
bigelephant29	100
axp	100
wcswswws	100
t3cmax	100
AngryBacon	70
prabowo	70
kunnu96	70
Orang3	70
kaushal02	70

Problem A. Vote

Confused? Read the [quick-start guide](#).

Small input
5 points

Solve A-small

You may try multiple times, with penalties for wrong submissions.

Large input
8 points

You must solve the small input first.

You have 8 minutes to solve 1 input file. (Judged after contest.)

Problem

A and B are the only two candidates competing in a certain election. We know from polls that exactly **N** voters support A, and exactly **M** voters support B. We also know that **N** is greater than **M**, so A will win.

Voters will show up at the polling place one at a time, in an order chosen uniformly at random from all possible $(\mathbf{N} + \mathbf{M})!$ orders. After each voter casts their vote, the polling place worker will update the results and note which candidate (if any) is winning so far. (If the votes are tied, neither candidate is considered to be winning.)

What is the probability that A stays in the lead the entire time -- that is, that A will always be winning after every vote?

Input

The input starts with one line containing one integer **T**, which is the number of test cases. Each test case consists of one line with two integers **N** and **M**: the numbers of voters supporting A and B, respectively.

Output

For each test case, output one line containing Case #**x**: **y**, where **x** is the test case number (starting from 1) and **y** is the probability that A will always be winning after every vote.

y will be considered correct if **y** is within an absolute or relative error of 10^{-6} of the correct answer. See the [FAQ](#) for an explanation of what that means, and what formats of real numbers we accept.

Limits

$$1 \leq \mathbf{T} \leq 100.$$

Small dataset

$$0 \leq \mathbf{M} < \mathbf{N} \leq 10.$$

Large dataset

$$0 \leq \mathbf{M} < \mathbf{N} \leq 2000.$$

Sample

Input	Output
2	Case #1: 0.33333333
2 1	Case #2: 1.00000000
1 0	

In sample case #1, there are 3 voters. Two of them support A -- we will call them A1 and A2 -- and one of them supports B. They can come to vote in six possible orders: A1 A2 B, A2 A1 B, A1 B A2, A2 B A1, B A1 A2, B A2 A1. Only the first two of those orders guarantee that Candidate A is winning after every vote. (For example, if the order is A1 B A2, then Candidate A is winning after the first vote but tied after the second vote.) So the answer is $2/6 = 0.333333\dots$

In sample case #2, there is only 1 voter, and that voter supports A. There is only one possible order of arrival, and A will be winning after the one and only vote.

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