1265 – Island of Survival

You are in a reality show, and the show is way too real that they threw into an island. Only two kinds of animals are in the island, the tigers and the deer. Though unfortunate but the truth is that, each day exactly two animals meet each other. So, the outcomes are one of the following

a) If you and a tiger meet, the tiger will surely kill you.
b) If a tiger and a deer meet, the tiger will eat the deer.
c) If two deer meet, nothing happens.
d) If you meet a deer, you may or may not kill the deer (depends on you).
e) If two tigers meet, they will fight each other till death. So, both will be killed.

If in some day you are sure that you will not be killed, you leave the island immediately and thus win the reality show. And you can assume that two animals in each day are chosen uniformly at random from the set of living creatures in the island (including you).

Now you want to find the expected probability of you winning the game. Since in outcome (d), you can make your own decision, you want to maximize the probability.

Input

Input starts with an integer **T (≤ 200)**, denoting the number of test cases.

Each case starts with a line containing two integers **t (0 ≤ t ≤ 1000)** and **d (0 ≤ d ≤ 1000)** where **t** denotes the number of tigers and **d** denotes the number of deer.

Output

For each case, print the case number and the expected probability. Errors less than 10^{-6} will be ignored.

Sample Input	Output for Sample Input
4 0 0 1 7 2 0 0 10	Case 1: 1 Case 2: 0 Case 3: 0.3333333333 Case 4: 1