Problem M. The End?

At the 2025 League of Legends Season 15 World Championship, T1 battled KT Rolster in a full five-game series, ultimately defeating KT with a 3-2 score to claim the championship. This match was exceptionally significant, giving birth to multiple new historical records.

As T1's star mid-laner, Faker has now achieved six World Championship titles in his personal career with this victory, further cementing his status as the "Greatest Player of All Time" in League of Legends. Besides Faker, his teammates Oner, Gumayusi, and Keria also accomplished the remarkable feat of securing three consecutive World Championship titles. Meanwhile, the newly joined top-laner Doran filled the gap in his personal accolades by winning his first World Championship.

The journey for the LPL region, however, was full of drama. The highly-touted first seed Bilibili Gaming (BLG) suffered a surprising upset loss to the North American team 100 Thieves in the very first round of the Swiss Stage. They were then eliminated in the crucial qualification match by Top Esports (TES), stopping at the Top 16 as a first seed and becoming one of the major upsets of the tournament. TES itself was swept 3-0 by T1 in the semi-finals, leaving the LPL region absent from the finals. Has the LPL reached its conclusion?

When we look back at the journey of the two finalist teams, everything began with the life-or-death knockout stage. The eight-team single-elimination bracket stipulated that teams were placed into the bracket based on their performance in the Swiss Stage, entering a series of head-to-head battles where the loser was immediately eliminated. The entire stage consisted of three rounds: the quarter-finals, where eight teams were narrowed down to four; the semi-finals, where these four teams produced two finalists; and the finals, where one ultimate champion was crowned from these two teams.

For Season 16, can our Team 1 win the championship? Please find the maximum probability of Team 1 winning the entire tournament.

More specifically, there are 8 teams participating in a single-elimination tournament. Each team i has two strength values a_i and b_i.

Before the tournament starts, you need to assign each team to a distinct seed from 1 to 8. The tournament follows the standard single-elimination bracket format:

- Round 1: seed 1 vs seed 2, seed 3 vs seed 4, seed 5 vs seed 6, seed 7 vs seed 8
- Round 2: winner of $(1, 2)$ vs winner of $(3, 4)$, winner of $(5, 6)$ vs winner of $(7, 8)$
- Round 3 (Final): winner of upper bracket $(1, 2, 3, 4)$ vs winner of lower bracket $(5, 6, 7, 8)$

When two teams compete against each other, the team with the smaller seed number uses its a-value as its strength, and the team with the larger seed number uses its b-value as its strength. If a team with strength x competes against a team with strength y, the probability that the first team wins is $\frac{x}{x+y}$.

You need to find the maximum probability of team 1 winning the entire tournament, considering all possible assignments of teams to seeds.

Input

The input consists of 8 lines. The i-th line contains two integers a_i and b_i ($1 \le a_i, b_i \le 100$), denoting the two strength values of team i.

Output

Output a line containing a real number, denoting the maximum probability that team 1 wins the tournament.

Your answer is acceptable if its absolute or relative error does not exceed 10^{-6}. Formally speaking, suppose that your output is a and the jury's answer is b, and your output is accepted if and only if $\frac{|a-b|}{\max(1,|b|)} \le 10^{-6}$.

Examples

standard input	standard output
10 80 20 70 30 60 40 50 50 40 60 30 70 20 80 10	0.329505822460368
100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100	0.125000000000000