Football rivalry (1) P99583_en

Novè Concurs de Programació de la UPC - Semifinal (2011-06-29)

Two long-time rival football teams, let us call them B (for beautiful manners) and M (for miserable manners), are playing again. Both teams are exhausted, so the first to score a goal will win the game for sure. At this moment, team B has the ball. If they decide to go all-in, for a direct attack, there is a probability w_B that they manage to score, thus winning the game. Hovewer, with probability $1 - w_B$ they will lose the ball while their goal is unprotected, and therefore they will lose. Team B has another option: to just pass the ball around. In that case, the possesion of the ball will eventually go to team M. Then we will have a simmetrical situation: If team M goes for a direct attack, they will win with probability w_M, and they will lose with probability $1 - w_M$. If they decide to just pass the ball and wait, eventually the possesion of the ball will go back to team B.

Given w_B and w_M, and assuming that both teams take the best decisions (to attack or not to attack) and that team B has the ball now, which is the probability that team B will win?

Input

Input consists of several cases, each with two real numbers w_B and w_M, both between 0 and 1. No given probability is 0.5.

Output

For every case, print the probability that team B will win with four digits after the decimal point. If no goal will be scored, state so.

Sample input

```
0.75 0.42
0 0.23
0.3 0.60004
```

Sample output

```
0.7500
NO GOAL
0.4000
```

Problem information

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