

8517 God of Gamblers

When I was young, my father is a senior gaming enthusiast. One day, we saw a old man in the street . He had a dice and played with other people .

Every turn the gambler gives k RMB to the old man and throw the dice . If the point is 1,2 or 3 he will win $2k$ RMB back otherwise he will get nothing .

My father told me, “I can win all his money by the following strategy”.

“Each turn I bet on 1 RMB first If I lose I will bet on 2 RMB. If I still lose, I will bet on 4,8,16,... and so on, until I win. And start to bet on 1 RMB, do the same thing again .”

“If I don't have enough money to bet, I will bet on all my money.”

Now the question is, if the dice is even, my father has n RMB, the old man has m RMB, they stop until one of them lose all his money, what's the probability of my father's victory .

Input

The input contains multiple test cases.(No more than 20)

In each test case:

The only line contains two numbers n, m . ($0 \leq n, m \leq 2000000$), indicate my father's money and the old man's . We guarantee $\max(n, m) \geq 1$.

Output

For each test case, print the answer in five decimal .

Sample Input

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1 0
3 3
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Sample Output

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1.00000
0.50000
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