Problem F

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.

In each turn the gambler gives *k* RMB to the old man and throws the dice. If the point is 1, 2 or 3, he will get 2*k* RMB back, or get nothing of not.

My father told me, "I can win all his money through the following strategy".

"In the first turn, I bet 1 RMB. If I lose, I will bet 2 RMB. If I lose again, I will bet 4, 8, 16 RMB and so on until I win a turn. Then I start to bet 1 RMB again and repeat the above-described behaviors."

"If I don't have enough money, I will bet all the rest of my money."

Suppose the dice is even. My father has *n* RMB and the old man has *m* RMB at the beginning. They will stop playing once anyone of them lost all his money. Now the question is: what is the probability of my father's win.

Input

The input contains several test cases up to 20.

In each test case, the only line contains two integers *n and m* (0<=*n, m*<=2000000 and 1<=max(n,m)) indicating the initial amount of money of my father and the old man.

Output

For each test case, print the possibility of my father's win with the precision of five digits after the decimal point.

Sample Input	Sample Output
1 0 3 3	1.00000 0.50000