Problem A. Coins

Alice and Bob are playing a simple game. They line up a row of n identical coins, all with the heads facing down onto the table and the tails upward.

For exactly m times they select any k of the coins and toss them into the air, replacing each of them either heads-up or heads-down with the same possibility. Their purpose is to gain as many coins heads-up as they can.

Input

The input has several test cases and the first line contains the integer t ($1 \leq t \leq 1000$) which is the total number of cases.

For each case, a line contains three space-separated integers n, m ($1 \leq n, m \leq 100$) and k ($1 \leq k \leq n$).

Output

For each test case, output the expected number of coins heads-up which you could have at the end under the optimal strategy, as a real number with the precision of 3 digits.

Example

standard input	standard output
6 2 1 1 2 3 1 5 4 3 6 2 3 6 100 1 6 100 2	0.500 1.250 3.479 3.000 5.500 5.000