

## 8468 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.

### Sample Input

```
6
2 1 1
2 3 1
5 4 3
6 2 3
6 100 1
6 100 2
```

### Sample Output

```
0.500
1.250
3.479
3.000
5.500
5.000
```