1317 – Throwing Balls into the Baskets

You probably have played the game **"Throwing Balls into the Basket"**. It is a simple game. You have to throw a ball into a basket from a certain distance. One day we (the AIUB ACMMER) were playing the game. But it was slightly different from the main game. In our game we were **N** people trying to throw balls into **M** identical Baskets. At each turn we all were selecting a basket and trying to throw a ball into it. After the game we saw exactly **S** balls were successful. Now you will be given the value of **N** and **M**. For each player probability of throwing a ball into any basket successfully is **P**. Assume that there are infinitely many balls and the probability of choosing a basket by any player is **1/M.** If multiple people choose a common basket and throw their ball, you can assume that their balls will not conflict, and the probability remains same for getting inside a basket. You have to find the expected number of balls entered into the baskets after **K** turns.

Input

Input starts with an integer **T (≤ 100)**, denoting the number of test cases.

Each case starts with a line containing three integers **N (1 ≤ N ≤ 16), M (1 ≤ M ≤ 100)** and **K (0 ≤ K ≤ 100)** and a real number **P (0 ≤ P ≤ 1)**. **P** contains at most three places after the decimal point.

Output

For each case, print the case number and the expected number of balls. Errors less than 10^{-6} will be ignored.

Sample Input	Output for Sample Input
2 1 1 1 0.5 1 1 2 0.5	Case 1: 0.5 Case 2: 1.000000