Problem A
Lights inside a 3D Grid

Input: Standard Input
Output: Standard Output

You are given a 3D grid, which have dimensions **N**, **M** and **P**. Each of the **M x N x P** cells has a light. Initially all lights are off. You will have **K** turns. In each of the **K** turns,

- You will select a cell A randomly from the grid
- You will select a cell B randomly from the grid
- Toggle the states of all the bulbs bounded by cell A and cell B, ie make all the ON lights OFF and make all the OFF lights ON which are bounded by A and B. To be more clear, consider cell A is (x1, y1, z1) and cell B is (x2, y2, z2). Then you have to toggle all the bulbs in grid cell (x, y, z) where min(x1,x2)<=x<=max(x1,x2) , min(y1,y2)<=y<=max(y1,y2) and min(z1, z2)<=z<=max(z1, z2).

How many bulbs are expected to be ON after K turns?

Note:
- A and B can be the same cell.

Input

First line of the input is an integer **T(T<101)** which denotes the number of test cases. Each of the next **T** lines represents one test case by 4 integers **N, M, P (0 < M, N, P < 101)** and **K (0<=K<=10000)** separated by spaces.

Output

Output one line for each test cases giving the expected number of ON lights. Up to 1E-6 error in your output will be acceptable. Print the case number followed by the output. Look at the sample output for exact format.

Sample Input	Output for Sample Input
2 2 3 4 1 2 3 4 2	Case 1: 6.3750000000 Case 2: 9.0976562500