Problem H. Great Cells

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Input file:     Standard Input
Output file:    Standard Ouptut
Time limit:     2 seconds
```

Mr. Panda likes playing puzzles with grid paper. Recently he invented a new rule to play with the grid paper.

At the beginning, he grabs a grid paper with N rows and M columns. Then he fills each cell an integer in the range of $[1, K]$. After filling all the cells, he starts finding *Great* cells in the grid. A cell is called *Great* cell if and only if it meets the following 2 conditions:

- The value in the cell is **strictly** larger than other cells in the same row.
- The value in the cell is **strictly** larger than other cells in the same column.

Now Mr. Panda is wondering how many different ways he can fill the grid paper so that there are **exactly** g *Great* cells.

As Mr. Panda likes simple conclusion number, let's just tell him the value

$$\sum_{g=0}^{NM} (g+1) \cdot A_g \mod (10^9+7)$$

A_g represents the number of different ways Mr. Panda can fill the grid paper such that there are exactly g *Great* cells.

Input

The first line of the input gives the number of test cases, T. T lines follow.

Each line represents a test case containing 3 integers N, M representing the number of rows and columns of the grid paper, K representing the range for filling numbers.

Output

For each test case, first output one line containing "`Case #x: y`", where `x` is the test case number (starting from `1`), `y` is the simple conclusion number for Mr. Panda.

Limits

- $1 \leq T \leq 20$.
- $1 \leq N, M, K \leq 200$.

Sample input and output

Sample Input	Sample Output
3 2 2 2 2 3 2 3 4 5	Case #1: 24 Case #2: 88 Case #3: 487890625

Note

For the first sample, $A_0 = 10, A_1 = 4, A_2 = 2, A_3 = A_4 = 0$, thus the answer is $10+4\times2+2\times3 = 24$.