

Point Blank

#include <pointblank>

In a town called "Fernando Pessoa", during the year of 2050, there was a game named PointBlank that has become very popular in the city. It was a classic online FPS game, where people of each team had to kill the players of the other team. The winner of a game was the one that killed the most amount of players after the end of all rounds.

The game was divided in M rounds, each one with N players in different positions. Kurohitsugi, the best player in the town was challenged to kill all the other N players in each round. He knows that he has only one chance: if he dies once, he loses.

According to a very experient captain, Sr. Anonymate, the best position where a player can stay in is exactly a point x that minimizes the sum of the squares of the distances to the other players. And, magically, we know that the probability of killing an oponent is exactly this point ' x ' divided by 100.

He wants to calculate the probability sum of killing all the soldiers in all the M rounds if he stays in the point x , but he isn't good in math or programming, so he asked for your help.

Input

The first line will contain two integers, N and M ($1 \leq N \leq 20$, $1 \leq M \leq 10^6$): the amount of players and the amount of rounds. Each of the next M lines will contain N integers X_i ($1 \leq X_i \leq 100$): the positions of the players.

Output

You have to print the sum of the probabilities of killing all the N players in each round.

Example

Input:

1 2

50

50

Output:

1.00000

Input:

1 1

100

Output:

1.00000

Input:

4 2

5 9 98 100

16 17 25 29

Output:

0.081143