Problem J. Trip Expenses

Input file:	`trip.in`
Output file:	`trip.out`
Time limit:	2 seconds
Memory limit:	256 megabytes

In Janap business trip expenses compensation is not based on the travel documents that the person presents to the accountant, but rather on the starting point of the trip and the destination of the trip. The means of transportation for the trip can be chosen by the one who is assigned to the trip on his own.

Of course, those who would like to save money choose the cheapest way of travelling between cities. However such way can often be composed of several segments and therefore take longer.

The Ministry of Finances of Janap is investigating the average number of trip segments required to get from one city to another. They suppose that the travelling person chooses the cheapest path, and among those he chooses the path with the smallest number of segments.

Help them to find that out.

Input

The first line of the input file contains two integer numbers n and m ($2 \le n \le 300$, $1 \le m \le 20\,000$) — the number of cities in Janap and the number of possible ways to get from one city to another — trip segments. The following m lines describe trip segments, each segment is described by three integer numbers a, b and c — the cities it connects and the cost of travelling along this segment. Each segment can be traveled in either direction. There can be several segments between two cities. The cost of travelling is positive and doesn't exceed 10^9. It is possible to get from any city to any other.

Output

Output one floating point number — the average number of segments required to get from one city to another by cheapest ways. You answer must be accurate up to 10^{-5}.

Example

trip.in	trip.out
3 3 1 2 10 2 3 2 1 3 3	1.3333333333333333

In the example the cheapest path from 1 to 2 has two segments ($1 \to 3 \to 2$), the cheapest paths from 1 to 3 and from 2 to 3 have one segment each. The average number of segments if $(2 + 1 + 1)/3 = 4/3$.