Land for Motorways

With every year, the plans for the construction of motorways in Poland are more and more advanced. For some time, it seemed as if the building was actually going to start, so the question of purchasing the land under the roads was of some importance. Only certain cities can be connected by a road directly, provided the farmer owning the land under it agrees to sell out. As a result of the constant swing of moods, the price demanded for the land by each farmer changes in a linear fashion, with possibly different coefficients for every road. It may either increase or decrease (and sometimes even be negative, if the owner anticipates future profit from the proximity of a motorway).

It has been decided that the purchase of land will be made at some moment in between two fixed dates. At that moment, the current prices of land will be frozen, and the least costly configuration of bidirectional roads connecting all cities (directly or indirectly) will be chosen. All the land under the selected roads will subsequently be bought at the frozen price. Since business in the proximity of a motorway does have its advantages, some land owners might actually want their land to be bought and they may offer money into the bargain, consequently making the price of purchase negative.

You act as an intermediary for the purchase and charge a steady commission, proportional to the total sum of purchase. Oddly enough, when signing the contract you missed the clause about the possibility of the price being negative and now you begin to wonder whether you won't end up being charged for your own hard work. Since it is one of your tasks to select the moment of purchase, do so in such a way as to maximise your profit (if this is impossible, at least cut your losses as much as possible).

Input

The input begins with the integer t, the number of test cases. Then t test cases follow.

For each test case the first line contains two integers n m, denoting the number of cities to be connected and the number of available potential roads,respectively($1<=n<= 120,1<=m<=820$). The next line contains two integers t_1 t_2, which stand for the earliest possible and latest possible moments of purchase ($-10000<=t_1<=t_2<=10000$). Each of the following m lines contains four integers, the i-th being: u_i v_i a_i b_i, which means that the i-th road connects city u_i with city v_i, and the purchase of the land under it costs b_i+j*a_i units of currency at moment j (e.g. at moment 0 the land costs b_i units). Please note that these integers are chosen from the following ranges: $0<=u_i,v_i<=n-1$, $-32000<=a_i,b_i<=32000$.

Output

For each test case output a line with two floating point numbers, accurate to three digits after the decimal point. The first represents the moment of transaction you ought to choose, the second - the total value of the transaction at that moment. If more than one moment fulfills the conditions of the problem, choose the earliest.

Example

Sample input:

```
2
5 6
0 5
1 0 -6 -4
2 0 3 -3
3 0 1 5
3 1 -2 -3
4 1 -3 -2
4 3 -2 -3
5 7
-20 20
1 0 1 2
2 1 -7 4
3 1 -9 0
3 2 4 9
4 1 0 -2
4 2 2 3
4 3 6 -5
```

Sample output:

```
0.000 -13.000
0.111 -1.000
```