C. The Great Silk Road Alliance (alliance)

Time limit: 1.0 second
Memory limit: 256 MiB

During the golden age of the Timurid Empire, an extensive web of trade routes known as the Great Silk Road connected the region's grandest cities. Two esteemed caravan masters, Ahmet and Kaan, are organizing their journeys through the unforgiving desert. Their goal is to arrive at their respective destinations while minimizing their expenditures on security guards and travel provisions.

The realm contains N historic cities (such as Samarkand, Bukhara, and Khiva) linked by M hazardous desert paths. The length of the i-th path is measured as w_i farsakhs (an ancient unit of distance). Ahmet must journey from city a_1 to city b_1, while Kaan must travel from city a_2 to city b_2. Both merchants may begin their journeys in the same city if their starting points align. To increase their safety in the desert, they are allowed to wait for one another at any settlement to unite their caravans.

The travel expenses are calculated based on the following rules:

- If a caravan traverses a path independently, the expense for that merchant is evaluated as the path's length (w_i) multiplied by the solo travel coefficient (l) in gold dinars.
- If Ahmet and Kaan unite their caravans and journey as a single group, their combined total expense is evaluated as the path's length (w_i) multiplied by the alliance coefficient (k) in gold dinars.

Determine the absolute minimum amount of gold dinars they need to spend collectively to guarantee both arrive at their final destinations. (Since traveling together provides shared security, a joint caravan is always more economical or equal in cost compared to hiring separate guards: $k \leq 2 \times l$).

Input

The initial line features two integers, N and M: the total number of cities and the number of desert paths.

The subsequent M lines each contain three integers, u, v, and w, describing a two-way path between city u and city v that spans w farsakhs.

The following line provides four integers: a_1, b_1, a_2, and b_2. These denote Ahmet's starting location, Ahmet's target destination, Kaan's starting location, and Kaan's target destination, respectively.

The concluding line presents two integers, l and k: the solo travel coefficient and the alliance coefficient.

Output

Print a single integer denoting the minimum total gold dinars required for both merchants to complete their journeys. It is guaranteed that they can complete their journeys under the given conditions.

Constraints

- $1 \leq N \leq 10^5$
- $1 \leq M \leq 250,000$
- $1 \leq u, v \leq N$
- $1 \leq w_i \leq 10^9$
- $1 \leq l, k \leq 200$
- $1 \leq a_1, b_1, a_2, b_2 \leq N$

Scoring

- **Subtask 1 (15 points):** $a_1 = a_2$
- **Subtask 2 (5 points):** $2 \times l = k$ and $w_i = 1$
- **Subtask 3 (7 points):** $2 \times l = k$
- **Subtask 4 (16 points):** $w_i = 1$, $N \leq 2000$, and $M \leq 2000$
- **Subtask 5 (25 points):** $N \leq 500$
- **Subtask 6 (10 points):** $N \leq 2000$, and $M \leq 2000$
- **Subtask 7 (22 points):** No additional constraints.

Examples

standard input	standard output
9 10 4 6 7 9 1 3 7 3 1 4 2 1 4 9 6 3 9 4 2 8 3 8 1 4 1 5 6 8 4 5 7 2 5 6 2 3	62
5 5 1 3 3 5 2 2 3 2 6 4 3 4 5 1 1 1 3 2 5 1 2	5

standard input	standard output
2 1 1 2 1 1 2 2 1 1 1	2
6 6 2 5 1 5 4 1 6 1 1 3 5 1 3 1 1 4 6 1 2 5 1 3 3 4	6

Explanation

Example 1: Ahmet plans to travel from city 7 to city 2, while Kaan intends to travel from city 5 to city 6. To achieve the absolute minimum expenditure, their optimal strategy involves meeting at city 9. From there, they journey together as an alliance until they reach city 4, at which point they separate to head to their final destinations.

Ahmet's route is: $7 \to 3 \to 9 \to 4 \to 2$.
Kaan's route is: $5 \to 1 \to 9 \to 4 \to 6$.

Let's break down their expenses:

- Ahmet rides solo from 7 to 3: 1 farsakh $\times$ 2 (solo rate) = 2 dinars.
- Ahmet rides solo from 3 to 9: 4 farsakhs $\times$ 2 = 8 dinars.
- Kaan rides solo from 5 to 1: 6 farsakhs $\times$ 2 = 12 dinars.
- Kaan rides solo from 1 to 9: 3 farsakhs $\times$ 2 = 6 dinars.
- They form an alliance and ride together from 9 to 4: 6 farsakhs $\times$ 3 (alliance rate) = 18 dinars.
- Ahmet rides solo from 4 to 2: 1 farsakh $\times$ 2 = 2 dinars.
- Kaan rides solo from 4 to 6: 7 farsakhs $\times$ 2 = 14 dinars.

Summing these expenses yields a minimum total of $2 + 8 + 12 + 6 + 18 + 2 + 14 = 62$ dinars.