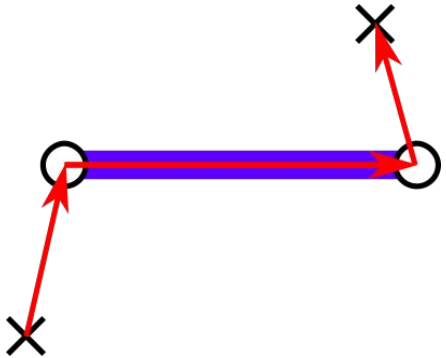
Level 2 - Journey time



Your task in this level is to estimate the total duration of a journey which uses a direct hyperloop connection.

The input now also includes a **journey** for a traveller wanting to get from a start location to an end location.

You should output the duration of the journey (in seconds), rounded to the nearest integer.

Journey modelling

A journey using the hyperloop is made up of 3 parts:

1. Driving from the journey start location to the closest stop of the two locations that make up the hyperloop connection
2. Travelling with the hyperloop in whichever direction is necessary
3. Driving from the other stop of the hyperloop connection to the journey end location

In our model, travellers drive at a constant **15 m/s**. They are always able to drive directly in a straight line to and from hyperloop locations.

It will never be faster to drive directly from the start to the end location than to use the hyperloop.

Data format

Input

A text file consisting of the following lines:

Single line: <NumberOfLocations>
NumberOfLocations lines: <LocationName> <LocationX> <LocationY>
***Single line:* <JourneyStartLocationName> <JourneyEndLocationName>**
Single line: <HyperloopLocationName> <HyperloopLocationName>

Output

Single line: <JourneyTime>

Example

Input

```
5
Prague 0 286100
Brno 152440 194430
Vienna 126350 78010
Bratislava 183680 71710
Budapest 318860 0
Prague Bratislava
Bratislava Brno
```

Output

```
12565
```

Explanation

The person wishes to travel from Prague to Bratislava. There is a hyperloop connection between Bratislava and Brno.

```
closest hyperloop stop to start = Brno
closest hyperloop stop to end = Bratislava

drivingTime(Prague Brno)
  = distance(Prague Brno) / 15.0
  = 177880.1 / 15.0
  = 11858.7

hyperloopTime(Brno Bratislava) = 706.5

walkingTime(Bratislava Bratislava) = 0.0

journeyTime = 11858.7 + 706.5 + 0.0 = 12565.2
```


Level 2