2. Problem Description

Imagine you are an MLA of a district and there are N number of villages in your constituency.

Your job is to vaccinate all the people in your constituency in minimum amount of time. There are two centres where vaccination is going on. First centre takes m1 minutes as average time for vaccinating one person and second centre takes m2 minutes as average time.

Population of every village is known to you prior to the vaccination drive. Schedule all the villagers to any centre such that overall time for vaccinating all the people of all the villages will be minimum.

Assume that there is no wait time in between vaccinating two people. Also, people belonging to the same village will need to be vaccinated in the same centre.

For example:

First centre takes 2 min as average time

Second centre takes 4 min as average time

Population data of 3 villages is known: 10 30 20

Number of people in 3 villages is given:

v1 = 10, v2 = 30, v3 = 20

Consider if schedule is drawn by distributing equal number of people to both centres, then

First centre: 10 20 total time = (10 + 20) * 2 = 60 min

Second centre: 30 total time = (30) * 4 = 120 min

Hence, minimum time required to vaccinate all the people will be = 120 min. i.e., Maximum of time taken in first centre or second centre.

But if it is scheduled like this:

Constraints

0 < m1, m2 <= 20

0 < N < 10 ^ 3

0 < Population of village <= 100

Input

First line contains an integer m1 which is average time in minutes taken for vaccination by the first centre

Second line contains an integer m2 which is average time in minutes taken for vaccination by the second centre

Third line contains an integer N which is number of villages in the constituency

Fourth line contains N space delimited integers denoting the population of villages

Output

Single integer value denoting the maximum time taken in minutes to vaccinate all villagers from all villages in your constituency

Time Limit (secs)

1

Examples

Example 1

Input

2

3

5

10 50 20 30 40

Output

180

Explanation:

Given the data of centre1 and centre2:

First centre takes 2 min as average time. Second centre takes 3 min as average time. Your constituency has 5 villages.

Number of people in each of the 5 villages is given: 50 10 20 30 40

v1 = 50, v2 = 10, v3 = 20, v4 = 30, v5 = 40

If schedule looks like this:

First centre: 10 50 total time = (10 + 50) * 2 = 120 min

Second centre: 30 40 20 total time = (20 + 40 + 20) * 3 = 240 min

Minimum time required to vaccinate all the people will be = 240 min

But if the schedule is drawn like this:

First centre: 10 30 50 total time = (10 + 30 + 50) * 2 = 180 min

Second centre: 40 20 total time = (40 + 20) * 3 = 180 min

Minimum time required to vaccinate all the people will be = 180 min

Example 2

Input

1

2

3

100 90 70

Output

180

Explanation:

Given the data of centre1 and centre2:

First centre takes 1 min as average time. Second centre takes 2 min as average time. There are 3 villages in your constituency.

Number of people in each of the 3 village is given: 100 90 70

v1 = 100, v2 = 90, v3 = 70

If schedule looks like this:

First centre: 100 90 total time = (100 + 90) * 1 = 190 min

Second centre: 70 total time = (70) * 2 = 140 min

Minimum time required to vaccinate all the people will be = 190 min

But if schedule is drawn like this:

First centre: 100 70 total time = (100 + 70) * 1 = 170 min

Second centre: 90 total time = (90) * 2 = 180 min

Minimum time required to vaccinate all the people will be = 180 min. Hence the output is 180.

3. Problem Description

The Indian Premier League (IPL) is a professional Twenty20 cricket league, contested by eight teams based out of eight Indian cities. IPL is going to start, and, in this season, you have been given the responsibility to maintain the score board of the league. You have been provided the result of each match. Total 8 teams compete (MI, CSK, RCB, RR, SRH, DC, PKBS, KKR) for winning the title. Each team will play two matches with every other team before playoffs. So, the total number of matches before playoffs will be 56 league matches. However, you will be provided details of only 54 matches.

The format in which the scores will be given is - the runs scored by team batting first followed by the fall of wickets followed by the number of balls played. The same data will be provided for team batting second.

For example-

Abstract Format – First Team Name Runs/Wickets Balls Played Second Team Name Runs/Wickets Balls Played

Actual Record - MI 191/10 110 CSK 190/4 120

Here MI scored 191 runs in 110 balls at the loss of 10 wickets and CSK scored 190 runs at the loss of 4 wickets in 120 balls.

The points table is to be constructed based on the given inputs. The points table contains <TeamName, Total Points Scored by team, and NRR (Net Run Rate)>. The order in which teams will be present is based on the ranking. Ranking of teams is first based on number of points and then on NRR, in case the points are tied.

The points table formation rules are given below

The team winning the match will get 2 points.

NET RUN RATE is calculated as follows:

Case 1: When both teams make same score. Each team is rewarded with 1 point each and run rate is zero for both the teams.