

Chocolate Tasting

Lea is a well-known chocolate gourmet: She loves all types of chocolate and has an impressive knowledge about them. Next week, she wants to organize a big chocolate tasting for all of her friends. They should try even the most exotic chocolate bars and feel the incomparable pleasure of melting high-quality chocolate on their tongues.

As Lea has many friends and maybe even more kinds of chocolate she likes, she needs to plan buying the chocolate in advance. She will need quite a few trips to the store to buy all the chocolate she needs. Since it is a little warmer at her home than in the chocolate store she knows in which order to buy the chocolate in a way that each chocolate bar has the perfect eating temperature when the big chocolate tasting starts. To find the perfect order, one needs to have a great knowledge about melting temperatures and the temperature curves for making chocolate, but Lea knows everything by heart and computed that order already. The store also prepared packages for Lea containing the chocolate bars.

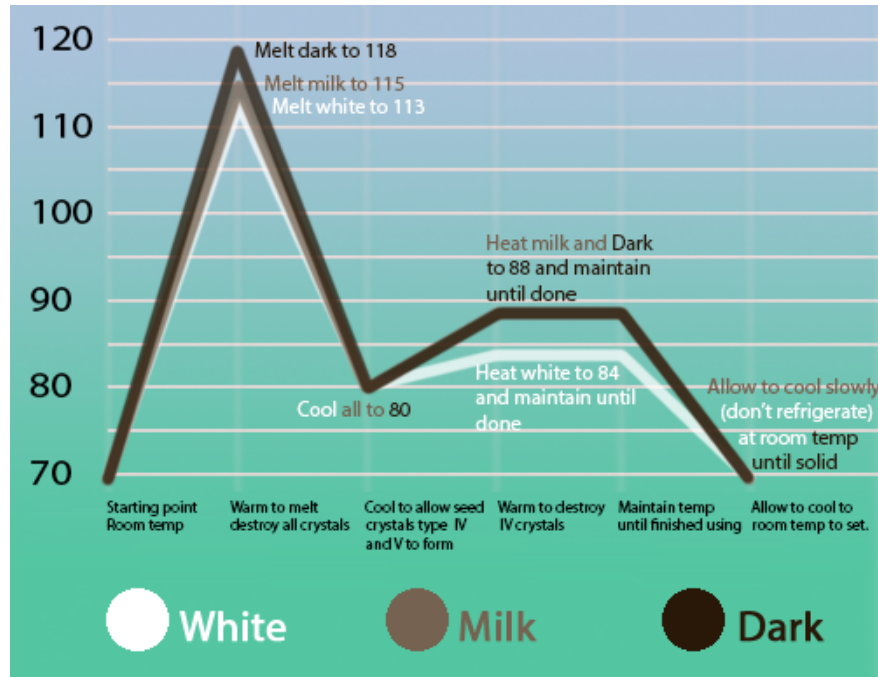


Figure 1: The perfect temperature curve for making chocolate. Source: <http://www.thecookinggeek.com>

Given the order to buy the chocolate bars, she needs to decide which packages to take at each visit of the store. Lea wants to visit the store as few times as possible. If she reaches the minimum number of store visits, she wants to minimize her chocolate carrying coefficient CCC . The CCC of one trip to the store is computed as

$$CCC(x) = \begin{cases} 0 & \text{if } x \leq a \\ (x - a)^2 & \text{if } a < x \leq b \end{cases}$$

where x is the amount of chocolate she carries at the moment, a is the amount of chocolate that Lea can carry without problems and b is the maximum amount of chocolate Lea can carry at all (all given in kilograms). The sum of the CCC 's of her trips should be as small as possible. Can you tell her what this sum will be?

Input

The first line of the input contains an integer t . t test cases follow, each of them separated by a blank line.

Each test case starts with a line containing three space-separated integers n , a and b where n is the number of chocolate packages and a and b are as described above. One line containing n space-separated integers follows describing the chocolate packages to buy in order. The i -th integer x_i describes the weight of the i -th package.

Output

For each test case, output one line containing “Case # i : y ” where i is its number, starting at 1, and y is the minimum sum of all CCC ’s such that the number of store visits is also minimized. Print “impossible” for y if Lea is not able to carry the chocolate to her home.

Constraints

- $1 \leq t \leq 20$
- $1 \leq n \leq 10^3$
- $1 \leq a \leq b \leq 100$
- $1 \leq x_i \leq 100$ for all $1 \leq i \leq n$

Sample Input 1

```
7
6 1 5
1 1 1 1 1 1

5 2 10
4 7 1 9 3

3 2 5
4 8 5

4 1 2
1 2 1 1

5 1 1
1 1 1 1 1

5 4 4
3 4 1 3 2

2 3 4
4 3
```

Sample Output 1

```
Case #1: 8
Case #2: 90
Case #3: impossible
Case #4: 2
Case #5: 0
Case #6: 0
Case #7: 1
```

Sample Input 2

```
7
6 3 6
3 5 5 2 1 6

8 3 4
4 4 4 1 3 3 1 3

5 2 4
3 2 3 2 4

8 3 7
3 6 5 2 1 5 4 2

6 4 4
1 4 3 1 4 2

5 1 3
2 1 2 1 2

6 4 4
3 4 4 1 1 3
```

Sample Output 2

```
Case #1: 17
Case #2: 5
Case #3: 6
Case #4: 43
Case #5: 0
Case #6: 9
Case #7: 0
```