

4078 Bodypump

Fennec has applied a card from CSI-Bally Total Fitness which is a gym in Beijing. He loves BODYPUMP best and joins in it about 3 times a week!

BODYPUMP is a weight-based group-fitness program created by Phillip Mills and distributed globally by Les Mills International.

The first BODYPUMP class was started in December 1991 in Auckland (according to Information published in UK via a report by Alan Felstead). The philosophy of Phillip Mills was to involve everyone into the aerobics room.

A standard class is 60 minutes long. There is also a 45 minute class. The lately BODYPUMP Express class, which lasting 30 minutes, has been introduced to Japan. And the class in Bally is about 50 minutes.

The classes are performed to music using free weights-plates, barbells and an aerobic step. Participants choose their weights based on the exercise and their personal strength levels. Major muscle groups are worked via series of compound and isolation-based exercises including squats, presses, dead lifts, as well as other exercises. The focus is enhancing muscle endurance using several repetitions. Hypertrophy occurs in all classes.

A new BODYPUMP class, consisting of new music and choreography, is developed and released to health clubs and instructors every three months. Muscle groups are always worked in the same order as stated in the Les Mills Instructor Resources, allowing for consistency across releases. Instructors can choose to work with one release, or mix tracks from multiple releases, in order to achieve maximal gains in strength and hypertrophy for their class. Instructors and trainers are provided with guidance from Les Mills International regarding the mixing of tracks for classes.

Music is used to guide and encourage participants. A normal class contains ten mainstream hit songs. The music is choreographed and each track targets for a different muscle group. The tracks consist of a warm up followed by squats, chest, back (clean and presses, dead lifts and dead rows), triceps, biceps, lunges, shoulders (a selection of push-ups, lateral raises, frontal raises and military presses), abdominals and finally a cool down encompassing a variety of stretches.

Due to the nature of the program maximum heart rate (MHR) increases in different phases. In addition, the aerobic capacity changes are based on music selection beats per minute (BPM).

However, during the BODYPUMP, Fennec needs to add or remove the plates to change the weight of his barbell to practice different parts of his muscle groups. To make it simple, we just divide the BODYPUMP into a sequence of songs and he will choose a weight in each song.

For example, there are three types of plates whose weights are 1-kg, 2-kg and 3-kg. And there are three songs which need the weight of 8-kg, 14-kg, and 10-kg.

Fennec can choose to add two 2-kg plates in each side of his barbell for the first song .

```

22-----22
  \o/
   I
  / \

```

Then, he can add one 3-kg plates in each side of his barbell for the second song.

```

322-----223
  \o/
   I
  / \

```

At last, he can remove the 3-kg plates and add one 1-kg plate in each side of his barbell.

```

122-----221
  \o/
   I
  / \

```

After the class, Fennec should remove all the plates out of his barbell and return them back.

Now, we can see that, during the class Fennec needs $4+2+4+6=16$ moves. It is for you now to find the way with the minimum number of moves. Please note that, the weight at each side of the barbell must be the same!

Input

This problem consists of several test cases, each of which is described below:

The first line of each test case contains one integer m ($m < 12$), which stands for the number of different types of plates.

The second line will contain m integers, which stands for the weight (< 101) of each plate. The third line contains one integer n ($n < 101$), which stands for the number of songs. The fourth line will contain n integers, which stands for the weight (< 24) of barbell needed in each song.

Output

For each case, just the output the minimum number of moves a line. If Fennec can not do the BODY-PUMP, you should output '-1'.

Sample Input

```

3
1 2 3
3
8 14 10
3
2 4 6
1
2

```

Sample Output

```

16
-1

```