长安大学第三届ACM-ICPC 程序设计竞赛校赛暨省赛选拔
正式赛试题

ACM association of CHD

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Contents

A Unpredictable Accidents

Description

Due to unpredictable accidents, *The Third Chang'an University ACM – ICPC Programming Competition* will be postponed for x minutes. We have known that the competition should have started at 12 : 00, and the duration of it is 5 hours. As a participant, you want know when is the ending time.

Please print the ending time in the form of $hh : mm$, hh is the hours with range of 00 to 24 and the mm is the minutes with range of 00 to 59.

Input

The first line contains an integer number T, the number of test cases.

i^{th} of each next T lines contains an integer $x(1 \leq x \leq 300)$, the number of minutes competition will postpone.

Output

For each test case print the the ending time in the form of $hh : mm$.

Sample Input

```
3
5
70
120
```

Sample Output

```
12:05
13:10
14:00
```

Output

For each test case print the probability of completing the goal, round to two decimal places.

Sample Input

```
3
2 2
4 3
2 1
```

Sample Output

```
0.50
0.22
0.00
```

D Dragon Ball Super

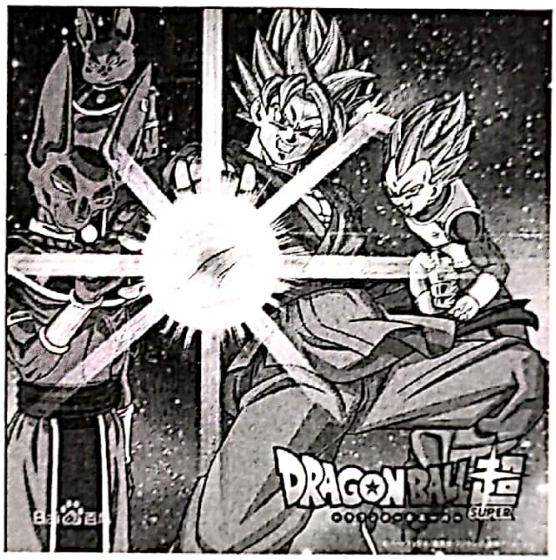
Description

Dragon Ball Super has finished. As a fan of *Dragon Ball*, *Ctr* couldn't forget any plot of it, especially the fighting scene of *Tournament of Power*(力量大会). People who participate in the *Tournament of Power* will become the teammate with those who come from the same universe, even *Son Goku* and *Frieza*.

There are n people who may participate in the *Tournament of Power*, these people are numbered from 1 to n. Also there are m relations (a_i, b_i) which means person a_i and person b_i are come from the same universe.

Ctr defines the *interest value* of the *Tournament of Power* is the number of different universes people, participate in *Tournament of Power*, come from.

Now, *Ctr* has q queries to ask you, each of which contains two integers: l, r. For each query you are required to tell him the *interest value* when people ($l, l+1, ..., r$) participate in the *Tournament of Power*.



Input

The first line contains an integer number T, the number of test cases.

For each test case :

The first line contains two integer numbers $n, m (1 \leq n, m \leq 10^5)$, the number of test cases.

The following m lines, each contains two integers $a_i, b_i (1 \leq ai, b_i \leq n)$, which means a_i^{th} person and b_i^{th} person are come from the same universe.

The next line contains an integer number q, the number of query.

The following m lines, each contains two integers $l, r (1 \leq l \leq r \leq n)$.

Output

For each query print the answer.

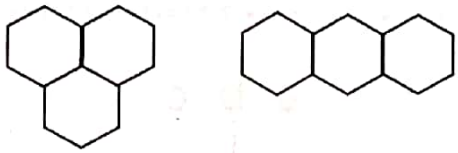
E Cellular Mobile Communication

Description

PSacfc is a student majors in *Communication Engineering*, and *Wireless Mobile System* is his favorite course.

One day, when the teacher talked about *Cellular Mobile Communication*, he thought of a problem. Given n regular hexagons, find the minimum number of sides exposed. A side of a regular hexagon exposed means no other hexagons' sides coincided with it. One side can be coincided with no more than one another.

For example, the first situation has 3 hexagons with 12 sides exposed, and the second situation has 3 hexagons with 14 sides exposed.



Your task is to find the minimum number of sides exposed with n regular hexagons.

Input

The first line contains an integer number T, the number of test cases.
i^{th} of each next T lines contains an integer number $n(1 \leq x \leq 10^9)$.

Output

For each test case print a number, minimum number of sides exposed.

Sample Input

```
3
3
4
7
```

Sample Output

```
12
14
18
```

*a*b*c*
3 5 1
*a*a*
aabbb

Sample Output

2
3
3
1

H Transfer Window

Description

As the end of the 2017/18 campaign approaches, football clubs across Europe will be assessing their squads and deciding which areas they need to improve when the summer transfer window opens. Clubs could sell and buy players as they want.

Aguin is a fan of Real Madrid, and he pays close attention to the summer transfer window. Among the data he collected, Real Madrid only has P dollars for the transfer window with the financial pressure. Real Madrid has n players, each of them has the ability value a_i and the transfer value b_i. (Real Madrid can obtain b_i dollars by selling the i^{th} player).

Also there are m players of other clubs are in the sale, each of them has the ability value c_i and the transfer value d_i. (Real Madrid will cost b_i dollars by buying the i^{th} player)

Aguin is curious the maximum sum of players' ability value Real Madrid could has. But he's too stupid to calculate it. Can you tell him?

Pay attention, what *Aguin* want is the maximum sum, even the number of Real Madrid's players is less than 11.

Input

The first line contains an integer number T, the number of test cases.

For each test case :

The first line contains an integer $n(1 \leq n \leq 1000)$, the number of players of Real Madrid.

The following n lines, each contains two integers $a_i(1 \leq a_i \leq 1000), b_i(1 \leq b_i \leq 1000)$, the ability value and the transfer value of the i^{th} player of Real Madrid.

The next line contains an integer $m(1 \leq m \leq 1000)$, the number of players in the sale.

The following m lines, each contains two integers $c_i(1 \leq c_i \leq 1000), d_i(1 \leq d_i \leq 1000)$, the ability value and the transfer value of the i^{th} player in the sale.

The next line contains an integer $P(1 \leq P \leq 1000)$, the money Real Madrid has at the beginning.

It' s guaranteed that the sum of b_i is no more than 1000.

Output

For each test case print the minimum sum of players' ability value Real Madrid could has.

I Delete String

Description

As a acmer, *Slp* is always thinking of problems, and a new problem come to his mind. Given two stings A and B, one can delete some characters of A to get a new string A' to make A' and B become a great match.

A great match of A' and B is defined as follow:

1. S' has length of k, B has length of m ($k \leq m$).
2. Define a substring of $B(B_1, B_2, Bk])$, as a new string B' with the same length as A'. For example, if A' has length of 3 and B is "*abcde*", the B' will be "*abc*".
3. There are exactly p(p is a given number) i that satisfy $B'_i \neq A'_i$.

If A' and B meet all the above conditions, we call A' and B is a great match.

Given two string A, B and a number p, your should help *Slp* to find the minimum number of deleting characters to get a string A' that has a great match with B.

For example, if A is "*aabbcc*", B is "*abcbc*" and p is 1, *Slp* can delete the 2^{nd}, the 4^{th} characters to get "*abcc*" as B'. Then B' is "*abcb*".So A' and B' has exactly 1 different location. So the answer is 2.

Note that *Slp* may delete all characters of A.

Input

The first line contains an integer number T, the number of test cases.

For each test case :

The first line contains three integers $n, m, p (0 \leq n, m, p \leq 10^3)$, length of S, T and the number p.

The second line contains a string A with the length of n.

The third line contains a string B with the length of m.

It is guaranteed that the strings contains only lowercase letters.

Output

For each test case print the minimum number of deleting characters to get a string S' that has a great match with T. If there is no such way print -1.

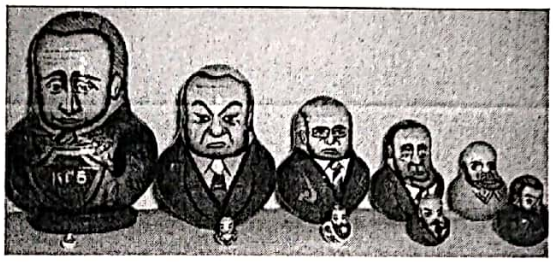
Sample Input

```
1
6 5 1
aabbcc
abcbc
4 4 3
aacc
aaba
2 5 0
ac
bbdcc
```

J New Matryoshka

Description

Russian Matryoshka is a wooden toy of Russia's specialties. It is usually made up of a set of one or more wooden dolls of the same pattern, with a flat bottom that can stand upright. Colors are red, blue, green, purple, etc. The most common pattern is a girl dressed in Russian national costume called "Matroska", which also became the generic name of this doll.



RainbowIsland has it's own Matryoshka, but it is different from the Matryoshka in Russia. It's composition rules are as follows:

1. The wooden doll is a two-dimensional figure with only two shapes, circle or square.
2. When two dolls are tangent to one another, the small one can be put into the the big one. For example, a circle with a radius of 2 can be put into a square with sides of 4.
3. Square dolls with side length of x can be put into another square dolls with side length of y when $x \leq y$. So as circle dolls.
4. A doll can be put into only one doll (but can be put continuously, which means doll A can be put into doll B, and the B with A can be put into doll C, while A and B couldn't be put into C separately).
5. The thickness of all dolls can be ignored.
6. If doll A has been put into doll B, the area of the final doll is the area of B. For example, a circle with a radius of 2 has been put into a square with sides of 4, and the final area is 16.

The well-known black heart businessman *ctr* is going to *ShuHuiYuan* for money with his dolls (there are n circle with the radius of r_i, m square with the side length of a_i). In order to to carry more dolls, he want to put some of them into the others to make the final area minimum.

Can you tell him what is the minimum final area?

Input

The first line contains an integer number T, the number of test cases.

For each test case :

The first line contains two integers $n, m (1 \leq n + m \leq 200)$, the number of circle and square dolls.

The following n lines, each contains an integers $r_i (1 \leq r_i \leq 10^5)$, the radius of the i^{th} circle doll.

The following m lines, each contains an integers $a_i (1 \leq a_i \leq 10^5)$, the side length of the i^{th} square doll.

Output

For each test case print the minimum final area, round to two decimal places.

K Counting On A Tree Again

Description

You are given an undirected tree (a connected acyclic undirected graph) of n vertices rooted at 1. Vertices are numbered from 1 to n. The i_{th} node has the value a_i.

Then there are q queries, each of them contains two integers: x, k. For each query, you are required to count how many pairs of (i, j) that satisfy the following condition:

1. $a_i = x$.
2. $|a_i - b_i| \leq k$.
3. The j_{th} node is an ancestor of the i_{th} node.

Input

The first line contains an integer number T, the number of test cases.

For each test case :

The first line contains an integer $n(1 \leq n \leq 2 * 10^4)$, the number of vertices.

The following $n - 1$ lines, each contains two integers $u, v(1 \leq u, v \leq n)$, which means there is an edge between u and v.

It is guaranteed that these edges denote a tree.

The next line contains n integers, the i_{th} integer a_i is the value of the i_{th} node.

The next line contains an integer $q(1 \leq q \leq 10^5)$, the number of queries.

The following m lines, each contains two integers $x(1 \leq x \leq 2 * 10^4), k(1 \leq k \leq 2 * 10^4)$, representing the queries.

Output

For each query print the answer.

Sample Input

```
1
1
8
1 2
1 3
2 4
2 5
3 6
6 7
6 8
1 2 2 4 2 5 8 6
2
2 1
6 3
```

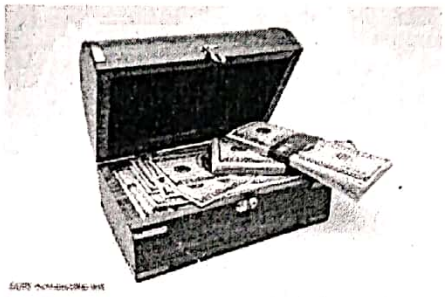
L Big Boss

Description

Many years later, *RainbowIsland* is in the mercy of big boss *qiami*. Big boss *qiami* is fond of number 9 because each side of the magic cube is made up of 9 small pieces and he changes the face value of circulating currency to $9^0, 9^1, 9^2, 9^3, 9^4$ *Yuan*.

One day programmer *Uucloud* went to a shop to buy Cat food worth n *Yuan*. The shopkeeper *NoMoreWords* and *Uucloud* are good friends so he will give *Uucloud* his change. *Uucloud* wants to know how many bills do they need in their trade at least.

For example, if *Uucloud* wants to buy cat food of 8 *Yuan*, he will pay a 9 Yuan bill and *NoMoreWords* will give *Uucloud* 1 *Yuan* bill as change. Two paper money are used in this trade.



Input

The first line contains an integer number T, the number of test cases.
Next T lines contains a number $n(1 \leq n \leq 10^9)$。

Output

For each test case print the number of bills they need at least.

Sample Input

2
14
18

Sample Output

6
2