

The Magician

Input file: standard input
 Output file: standard output
 Time limit: 1 second
 Memory limit: 1024 megabytes






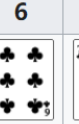




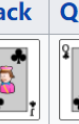
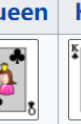
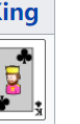











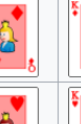
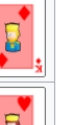




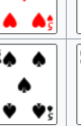




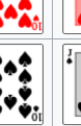
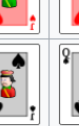
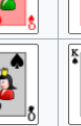
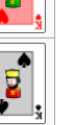

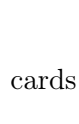
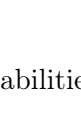
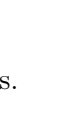









“And now, the curtain rises.”

— ????

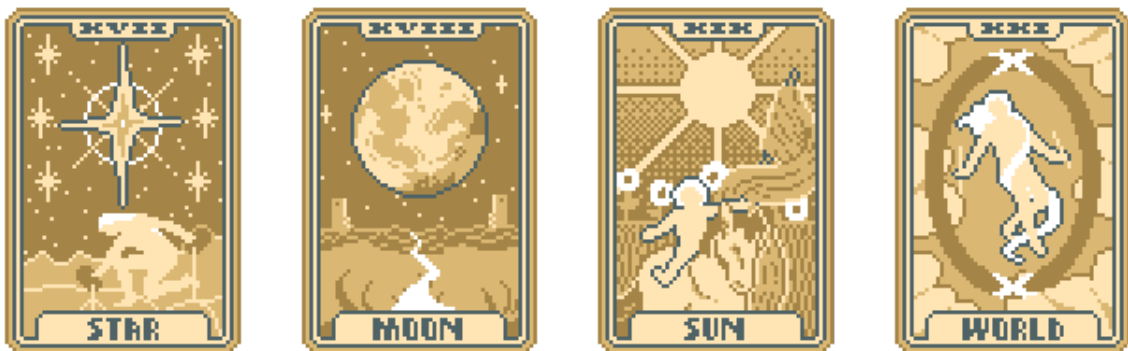
You are given some special Tarot cards from the Major Arcana, including *The Lovers*, *Death*, *The Star*, *The Moon*, *The Sun*, and *The World*, along with some other playing cards in hand. You have at most one of each kind of Tarot card, and each Tarot card has a unique ability that can alter the suits of other playing cards in your hand. Your task is to determine the maximum number of **flushes** that can be played by the playing cards in hand after using the given Tarot cards each at most once.

The playing cards are standard playing cards, shown as below.

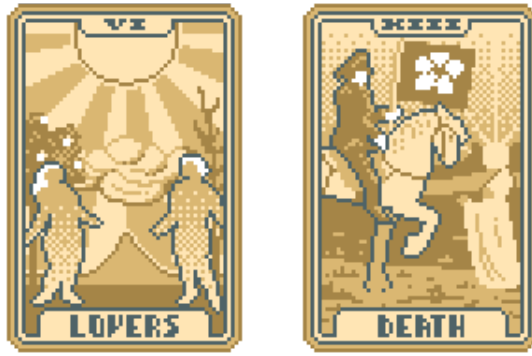
Example set of 52 playing cards; 13 of each suit: clubs, diamonds, hearts, and spades

	Ace	2	3	4	5	6	7	8	9	10	Jack	Queen	King
Clubs													
Diamonds													
Hearts													
Spades													

Here is a list of Tarot cards abilities.



- *The Star*: Converts up to 3 selected playing cards to Diamonds (♠).
- *The Moon*: Converts up to 3 selected playing cards to Clubs (♣).
- *The Sun*: Converts up to 3 selected playing cards to Hearts (♥).
- *The World*: Converts up to 3 selected playing cards to Spades (♠).



- *The Lovers*: Converts 1 selected playing card into a *Wild Card* (\otimes , can be used as any suit).
- *Death*: Select exactly 2 playing cards, replace one card with the copy of the other card (copy the suit, the rank, and the *Wild Card* status).

You can use the Tarot cards in any order. Each given Tarot card can be used at most once and can never be used at all. There is a special rule about *The Lovers*:

- Once a playing card has been converted into a *Wild Card* (using *The Lovers* or *Death*), it remains a *Wild Card* even after applying *The Star*, *The Moon*, *The Sun*, and *The World*;
- However, if *Death* is used to replace a *Wild Card* with a copy of another card that is not a *Wild Card*, the resulting card will not be a *Wild Card*.

A **flush** is a set of 5 playing cards, which could be considered a same suit: there is a suit (among Diamond, Club, Heart, and Spade) such that each of the 5 playing cards is either of this suit or is a *Wild Card*.

Playing a **flush** means that the 5 cards forming the **flush** are discarded from hand, all of which cannot be used in another **flush**. To the contrary of many card games including *Balatro*, you draw no new cards from the deck after playing cards.

Input

The input consists of multiple test cases. The first line contains a single integer T ($1 \leq T \leq 13$) — the number of test cases. The description of the test cases follows.

The first line contains an integer n ($1 \leq n \leq 52$), the number of playing cards in hand.

The second line contains n space-separated strings, each representing a playing card in hand. Each playing card is represented by two characters: one for rank and one for suit, where the suit is one of D (Diamonds), C (Clubs), H (Hearts), or S (Spades), and the rank is one of 2-9, T (10, Ten), J (Jack), Q (Queen), K (King), or A (Ace).

The third line contains six space-separated integers $t_1, t_2, t_3, t_4, t_5, t_6$ ($0 \leq t_i \leq 1$), where:

- t_1 represents the number of *The Star*.
- t_2 represents the number of *The Moon*.
- t_3 represents the number of *The Sun*.
- t_4 represents the number of *The World*.
- t_5 represents the number of *The Lovers*.
- t_6 represents the number of *Death*.

It is guaranteed that the sum of n among T test cases does not exceed $104 = 52 \times 2$, and the playing cards are pairwise distinct in each test case.

Output

For each test case, print the maximum number of **flushes** that can be played in a single line.

Example

standard input	standard output
4	1
5	1
2H 3H 4H 5H 6D	0
1 1 1 1 0 0	2
5	
2S 3S 4D 5C 6D	
0 0 1 0 1 1	
5	
2S 3S 4D 5C 6D	
0 0 1 0 1 0	
13	
AS 2S 3S 4S 5H 6H 7H 8H 9H TH JH QH KH	
0 0 0 0 0 1	

Note

In the first case, we can convert $6\heartsuit$ into $6\spadesuit$ using *The Sun*, and play $2\heartsuit 3\heartsuit 4\heartsuit 5\heartsuit 6\heartsuit$ as a **flush**. This is not the only possible way; another possible way to play the same set of cards is:

- Convert $4\heartsuit 5\heartsuit 6\heartsuit$ into $4\spadesuit 5\spadesuit 6\spadesuit$ using *The World*;
- Convert $4\spadesuit 5\spadesuit 6\spadesuit$ into $4\heartsuit 5\heartsuit 6\heartsuit$ using *The Sun*.

In the second test case, one possible way to play a **flush** is:

- Convert $2\spadesuit 3\spadesuit 4\spadesuit$ into $2\heartsuit 3\heartsuit 4\heartsuit$ using *The Sun*;
- Convert $5\clubsuit$ into $5\otimes$ using *The Lovers*;
- Replace $6\heartsuit$ with a copy of $5\otimes$ using *Death*;
- Play $2\heartsuit 3\heartsuit 4\heartsuit 5\otimes 5\otimes$.