Word Games

One word game is played by trying to form as many correctly spelled words as possible from a set of randomly chosen letters. For example, if the letters are "ABCDEFGH", and a standard dictionary is used, you can form 22 three letter words, 16 four letter words, and 8 five letter words. The input letters may each be used at most once. If the same letter is repeated in the input letters, then each instance may be used once.

In this problem you will count the number of 3, 4 and 5 letter words that can be created using the input letters.

Input

The input file will contain a dictionary of legal spellings. Then it will contain several input letters to use to form words that exist in the dictionary. The format will be as follows:

NUMBER_OF_WORDS_IN_THE_DICTIONARY
WORD_1
WORD_2
...
WORD_N
NUMBER_OF_PROBLEMS_IN_THE_FILE
LETTERS_1
LETTERS_2
...
LETTERS_M

There will be less than 100,000 words in the dictionary. There will be at most 100 problems. There will be 8 letters in each problem. All words and letters will be in upper case. The words in the dictionary will be in alphabetical order.

Output

Each line in the output file will consist of three integer values separated by single spaces. The first value is the number of 3 letter words, the second is the number of 4 letter words, and the last is the number of 5 letter words. There will be a new line for each problem in the input file.

`input.txt:`

(For your convenience, this testing file can be downloaded from: http://contest.cs.dixie.edu/sample/word_games_sample_input.txt)

```
96$
ABE$
ABED$
...
HEDGE$
```

```
HEED$
3$
ABCDEFGH$
ABAUBVZH$
GJJHTCAB$
```

output.txt:

```
22 16 8$
3 1 0$
5 1 0$
```