

Videopoker is the slot machine variant of the currently immensely popular game of poker. It is a variant on draw poker. In this game the player gets a hand consisting of 5 cards randomly drawn from a standard 52-card deck. From this hand, the player may discard any number of cards (between 0 and 5, inclusive), and change them for new cards randomly drawn from the remainder of the deck. After that, the hand is evaluated and the player is rewarded according to a payout structure. A common payout structure is as follows:

Hand	Payout
one pair	1
two pair	2
three of a kind	3
straight	4
flush	5
full house	10
four of a kind	25
straight flush	100
royal flush	250

Once you know the payout structure, you can determine for a given hand which cards you must change to maximize your expected reward. We'd like to know this expected reward, given a hand.

Input

On the first line one positive number: the number of testcases, at most 100. After that per testcase:

- One line with nine integers x_i ($0 \leq x_i \leq 1000$) describing the payout structure. The numbers are in increasing order and describe the payout for one pair, two pair, etc, until the royal flush.
- One line with one integer n ($1 \leq n \leq 10$): the number of starting hands to follow.
- n lines, each describing a starting hand. A hand consists of 5 space separated tokens of the form Xs , with X being the rank ('2' ... '9', 'T', 'J', 'Q', 'K' or 'A') and s being the suit ('c', 'd', 'h' or 's').

Output

Per testcase:

- One line for each starting hand with a floating point number that is the maximal expected reward for that hand. These numbers must have an absolute or relative error less than 10^{-6} .

Note: Poker hand rankings

For those of you not familiar with the game of poker, here follow explanations of the different poker hand rankings:

- "one pair" consists of two cards of the same rank and three unmatched cards, e.g. Ah As Tc 8h 2c;
- "two pair" consists of two cards of the same rank, two cards of a different same rank and an unmatched card, e.g. Ah As Th Ts 3c;
- "three of a kind" consists of three cards of the same rank and two unmatched cards, e.g. Kc Kh Ks 6c 5s;
- a "straight" consists of 5 cards of sequential rank in more than one suit, e.g. Jd Ts 9c 8d 7h. The ace can be used as low or high card, so straights from ace to 5 and from ten to ace can be formed;
- a "flush" consists of 5 cards of the same suit, that are not in sequential rank, e.g. Ks Qs 8s 5s 3s;
- a "full house" consists of three cards of the same rank and two cards of a different same rank, e.g. Js Jh Jc 4s 4c;
- "four of a kind" consists of four cards of the same rank and an unmatched card, e.g. 7h 7c 7s 7d 5c;
- a "straight flush" consists of 5 cards that form both a straight and a flush and that is not a royal flush, e.g. 7h 6h 5h 4h 3h;
- a "royal flush" consists of 5 cards that form both a straight from ten to ace and a flush, e.g. As Ks Qs Js Ts.

Sample Input

```
1
1 2 3 4 5 10 25 100 250
5
Ah Ac Ad As 2s
Ks Qs Js Ts 2h
Ks Qs 2d 2h 3s
2d 4h 5d 3c 9c
2h 3h 6d 8h Tc
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Sample Output

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25.000000
8.9574468
1.5467160
0.9361702
0.6608135
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