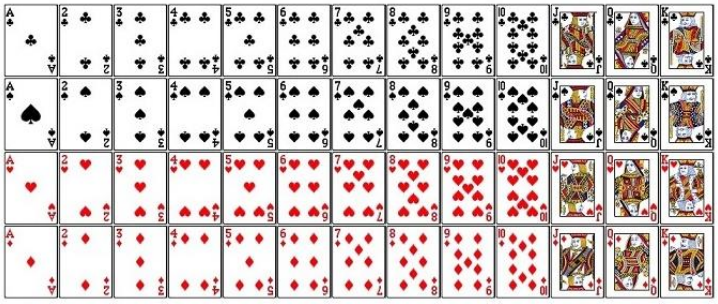
31 Blackjack

30 points

Introduction

Blackjack is a famous card-based game of chance. It is played using a poker deck. Each card represents its numeric value, except figure cards (Jack, Queen and King) that all score the same 10 points. The Ace card can score either 1 or 11 points depending on what is of most benefit to the player.



The goal is to reach 21 points without going over. At the beginning of the game the player is dealt 2 cards, and the croupier, who represents the casino bank, is dealt 1 card. From that moment, the player can request another card as many times as they want until they reach 21 or go over. Alternatively, the player can stand (i.e., take no more cards) and stay with the cards they already have. If the player stands with 21 or less, then the croupier begins to deal themselves cards until they reach 17. The croupier will ask for another card while their sum is less than 17 and stand if their sum is 17 or greater. Once both have been planted or, have gone over 21, the winner of the hand is decided.

If the player has gone over 21, they lose, regardless of what the croupier has. If the croupier has gone over 21 and the player has not, the player wins. Whenever both are at 21 or less, the one with the highest amount wins. If both have the same sum, the hand ends in a draw. The only exception would be if either the player or the croupier achieves the sum of 21 by using only two cards, this is called a 'Blackjack', in this case it is the 'Blackjack' holder that always wins the hand.

As said before, note that the score of each Ace could be either 1 or 11, it always gives the best advantage for winning. For example, with the cards Ace, plus a 9, the Ace will score 11 (11 + 9 = 20). But with cards Ace, plus 9, plus 5, the Ace will score 1 (1 + 9 + 5 = 15), otherwise the sum is bigger than 21 (11 + 9 + 5 = 25).

Can you find out the odds that I have to win, draw, and lose if I stand with a certain sum, knowing which is the initial card the croupier has and how many cards of each type are still to come out?

A very simple case would be, for example, the player is planted with 17, the croupier's card is 10 and, in the deck remains 1 seven, 2 nines and 1 five. In this case, the player's odds of losing would be 50%, the odds of a draw would be 25% and those of a win 25%.

Input

- The first line will be S, a number storing the total sum got when the player is planted. A "B" letter, meaning a Blackjack, will appear instead of a number when the total sum is 21 with two cards.

- Second line is C a number that represents the value of a croupier's initial card.

- The next ten lines will be Dn, that is the number of cards of each type (Ace, two, three, ..., nine, ten plus figures) that remain in the deck. Notice that more than one deck can be used in the game.

Output

The output will be three lines. The first line will contain the probability of the player winning, the second the probability of the player being in a tie, and the third the probability of the player losing. All probabilities must be expressed with one decimal, truncating the remaining decimal places (do not round the number).

Restrictions to be considered

3 < S < 22

0 < C < 11

0 <= Dn <= 128

Example 1

Input

```
17
10
0
0
0
0
1
```

```
0
1
0
2
0
```

Output

```
25.0
25.0
50.0
```

Example 2

Input

```
13
2
24
24
24
24
24
24
24
24
24
128
```

Output

```
39.9
0.0
60.0
```