

Calculate your GPA

Design a calculator to calculate your GPA. Possible grades are S, A, B, C, D and E. S corresponds to 10 credits, A to 9, B to 8, C to 7, D to 6 and E to 5. There are n subjects. Each subject has a number of credits and the grade obtained by the student.

GPA of the student is the summation of [[grades obtained multiplied by the number of credits for each subject]] divided by the total number of credits. for example, if input is n = 3 and three subjects have credits 3, 4 and 5. a student has obtained grade S, A and B respectively, then $GPA = (3*10 + 4*9 + 5*8)/(3+4+5)$

Input

First line consists of t, the number of test cases ($1 \leq t \leq 20$)

Each test case starts with n, the number of subjects ($1 \leq n \leq 16$)

next n lines consist of credits for that subject followed by grade obtained by the student ($1 \leq credits \leq 10$ and grade will be one among S, A, B, C, D and E)

Output

For each test case, print the GPA of the student rounded off to two decimal places.

Example

Input:

```
1
12
4 D
1 E
1 S
3 D
1 E
2 A
4 A
4 A
3 C
1 C
1 B
2 D
```

Output:

```
7.41
```