Problem C
Cutting the Cube

Input file: *testdata.in*
Time limit: x seconds

Problem Description

A cube (see Fig. 1(a)) has six faces and each face is connected to four other faces. Here, we label a face with A0, A1, B0, B1, C0, and C1. For convenience, A0 and A1 are not connected. B0 and B1 are not connected. C0 and C1 are not connected. Let the edge between A0 and C0 be represented as (A0-C0).

When we carefully cut the edges (A0-B0), (A0-C1), (A0-B1), (B0-A1), (B0-C1), (B1-C1), (A1-B1), a cube can be flatten into Fig. 1(b). Note that, the faces should remain connected. Disjoint sets of faces are not allowed. Fig. 1(c) shows a different cut to flatten the cube.

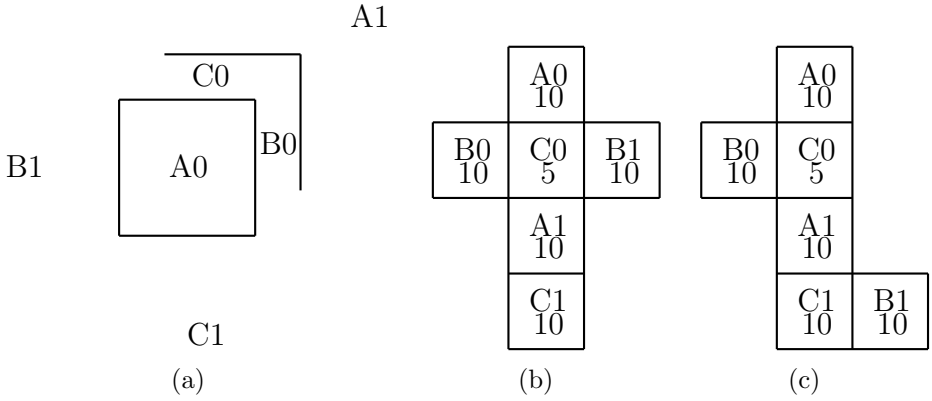

Figure 1: A cube with labeling and its flatten result.

Now, each face is associated with a score. After you flatten a cube, a face can collect scores from its connected faces (a.k.a., neighbors). For example,

C0 can collect 40 points from its neighbors. By adding all the scores of 6 faces, you can get a score for the cut. For example, in Fig. 1(b) you can get 80 points but you can get 85 points from Fig. 1(c).

Given a cube and scores for 6 faces, please compute the maximum score from any valid cuts of the cube.

Input Format

The input file begins with a positive integer N, which is the number of test cases. In each test cases, six lines of face labels and scores (separated by a space) are listed. The score of a cube face is positive integer, which is < 1000. Two test cases are separated by a new line.

Output Format

For each test case, please print out the maximum total points from all the valid cut.

Sample Input

```
2
A0 10
A1 10
B0 10
B1 10
C0 5
C1 10

A0 10
A1 20
B0 10
B1 50
C0 5
C1 10
```

Sample Output

For the sample input file, the standard output should be:

```
100
275
```