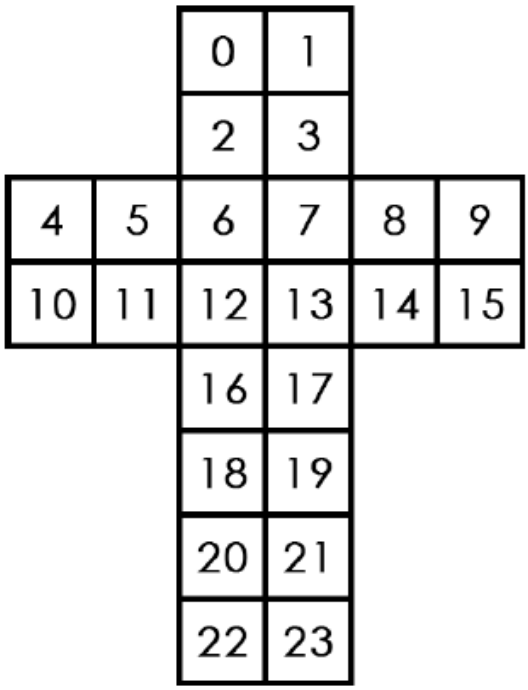
6621 Pocket Cube

Pocket Cube is a 3-D combination puzzle. It is a $2 \times 2 \times 2$ cube, which means it is constructed by 8 mini-cubes. For a combination of 2×2 mini-cubes which sharing a whole cube face, you can twist it 90 degrees in clockwise or counterclockwise direction, this twist operation is called one twist step.

Considering all faces of mini-cubes, there will be totally 24 faces painted in 6 different colors (Indexed from 0), and there will be exactly 4 faces painted in each kind of color. If 4 mini-cubes' faces of same color rely on same large cube face, we can call the large cube face as a completed face.

Now giving you an color arrangement of all 24 faces from a scrambled Pocket Cube, please tell us the maximum possible number of completed faces in no more than N twist steps.

Index of each face is shown as below:



Input

There will be several test cases. In each test case, there will be 2 lines. One integer N ($1 \leq N \leq 7$) in the first line, then 24 integers C_i separated by a single space in the second line. For index $0 \leq i < 24$,

C_i is color of the corresponding face. We guarantee that the color arrangement is a valid state which can be achieved by doing a finite number of twist steps from an initial cube whose all 6 large cube faces are completed faces.

Output

For each test case, please output the maximum number of completed faces during no more than N twist step(s).

Sample Input

```
1
0 0 0 0 1 1 2 2 3 3 1 1 2 2 3 3 4 4 4 4 5 5 5 5
1
0 4 0 4 1 1 2 5 3 3 1 1 2 5 3 3 4 0 4 0 5 2 5 2
```

Sample Output

```
6
2
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