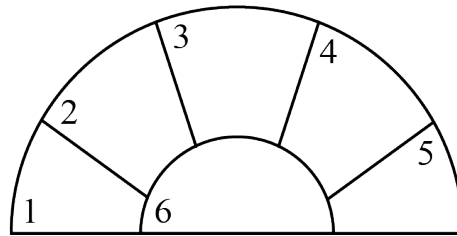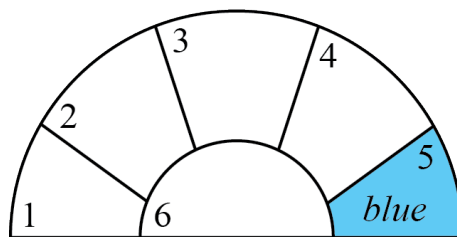# Problem of the Week
Problem E
Adding Some Colour 3

Lucia and Henrik play a game where they take turns colouring regions in the diagram shown red or blue. On their turn, each player colours a region in the diagram that is not bordering another region of the same colour.

After some number of turns, it won't be possible to colour any more regions, and the game will be over. The winner is the player who coloured the last region.

Lucia went first. On her turn, she coloured region 5 blue, so after her turn the diagram is coloured as follows.

It is now Henrik's turn and there are five remaining regions. Determine all possibilities for the colour Henrik should use and the region he should choose in order to guarantee that he wins the game, regardless of what Lucia does on her remaining turns.