Name .... group .... row .... col....

1. There exists a planar graph with 7 vertices, 12 edges and 7 faces.	. . .
2. There exists a planar graph with 6 vertices, 11 edges and 5 faces.	
3. Graph G_1 is planar.	
4. Graph G_2 is planar.	
5. There exists a hamiltonian bipartite graph with odd number of vertices.	
6. Vertices of any bipartite k-regular graph G can be colored properly with $\chi(G)$ in such a way that there is the same number of vertices in every color.	
7. If graph G is 3-regular, connected with $\chi'(G) = 3$ then G is hamiltonian.	
8. Every complete graph has Euler tour or a perfect matching	
9. The chromatic number of graph G_3 is	
10. The chromatic index of graph G_1 is	

11. Prove that for each graph G:
$\chi(G)\chi(\overline{G}) \geq |G|$.

12. Prove that no mater how edges of $K_{11,11}$ have been colored with tree colors at least one of monochromatic subgraphs is not planar. (hint: in bipartite planar graph there is at most $2|G| - 4$ edges).

Name .... group .... row .... col....

1. There exists a planar graph with 7 vertices, 10 edges and 7 faces.	. . .
2. There exists a planar graph with 6 vertices, 9 edges and 5 faces.	
3. Graph G_3 is planar.	
4. Graph G_4 is planar.	
5. There exists a hamiltonian graph with exactly one cut-vertex.	
6. Edges of any bipartite k-regular graph G can be colored properly with $\chi'(G)$ in such a way that there is the same number of edges in every color.	
7. Every regular, connected, bipartite graph is eulerian.	
8. Every hamiltonian graph has a perfect matching	
9. The chromatic number of graph G_1 is	
10. The chromatic index of graph G_3 is	

11. Show that if G is a k-regular graph with odd number of vertices then $\chi'(G) = \Delta(G) + 1$.

12. Prove that no mater how edges of K_{17} have been colored with tree colors at least one of monochromatic subgraphs is not planar. (hint: in planar graph there is at most $3|G| - 6$ edges).