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Section:

13. Combinatorics

1991 MS Classification: 5, 5C, 20
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Cayley's Graphs of order 12

From the well known five groups of order twelve we generate Cayley graphs with 12 vertices. A classification of these graphs is intended and in this process we believe that new general graph families are found. Some general results involving isomorphic Cayley's graphs are presented. A discussion about isomorphic Cayley's graphs, generated by different subsets of a given group, using the automorphism group of that group, is given. Cyclic subgroups of a group generate bipartite Cayley's graphs. A nice formula for counting triangles in our graphs is presented. Finally, a complete list of all the vertex transitive graphs with twelve vertices is given.
Reference: A. T. White, Graphs, Groups and Surfaces, (1973) Allyn and Bacon Series in Advance Mathematics, Boston, USA.