

A006712

Figure 1 gives an illustration of $a(2)$. Each vertex must be trivalent. Isomorphism includes the edge-colouring and vertex-labelling.

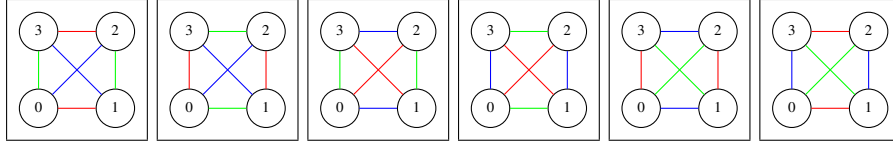


Figure 1: $A006712(2) = 6$.

Figure 2 gives an illustration of $a(3)$. There are two unlabelled graphs that contribute to the total. The number of distinct labellings of a (unlabelled) graph G is given by $|V|!/|\text{Aut}(G)|$ where $|V|$ denote the number of vertices and $|\text{Aut}(G)|$ is the order of the automorphism group for G .

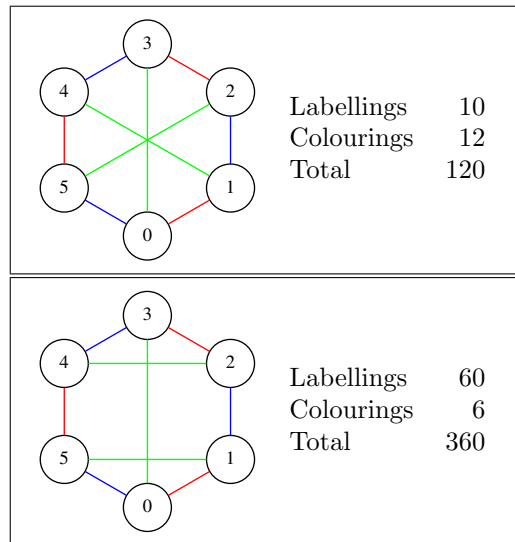


Figure 2: $A006712(3) = 480$ (depicted colouring and labelling an example only).

$A006712$ and $A006713$ differ from $a(4)$ onwards as $A006712$ includes contributions from disconnected graphs. Figure 3 deals with the connected cases. For $A006712(4)$ there is an additional contribution of $\frac{1}{2} \binom{8}{4} A006712(1)^2 = 1260$ from juxtaposing two copies of the graph in Figure 1. For larger n some trivalent graphs admit no 3-edge-colouring and therefore contribute nothing to the overall sum.

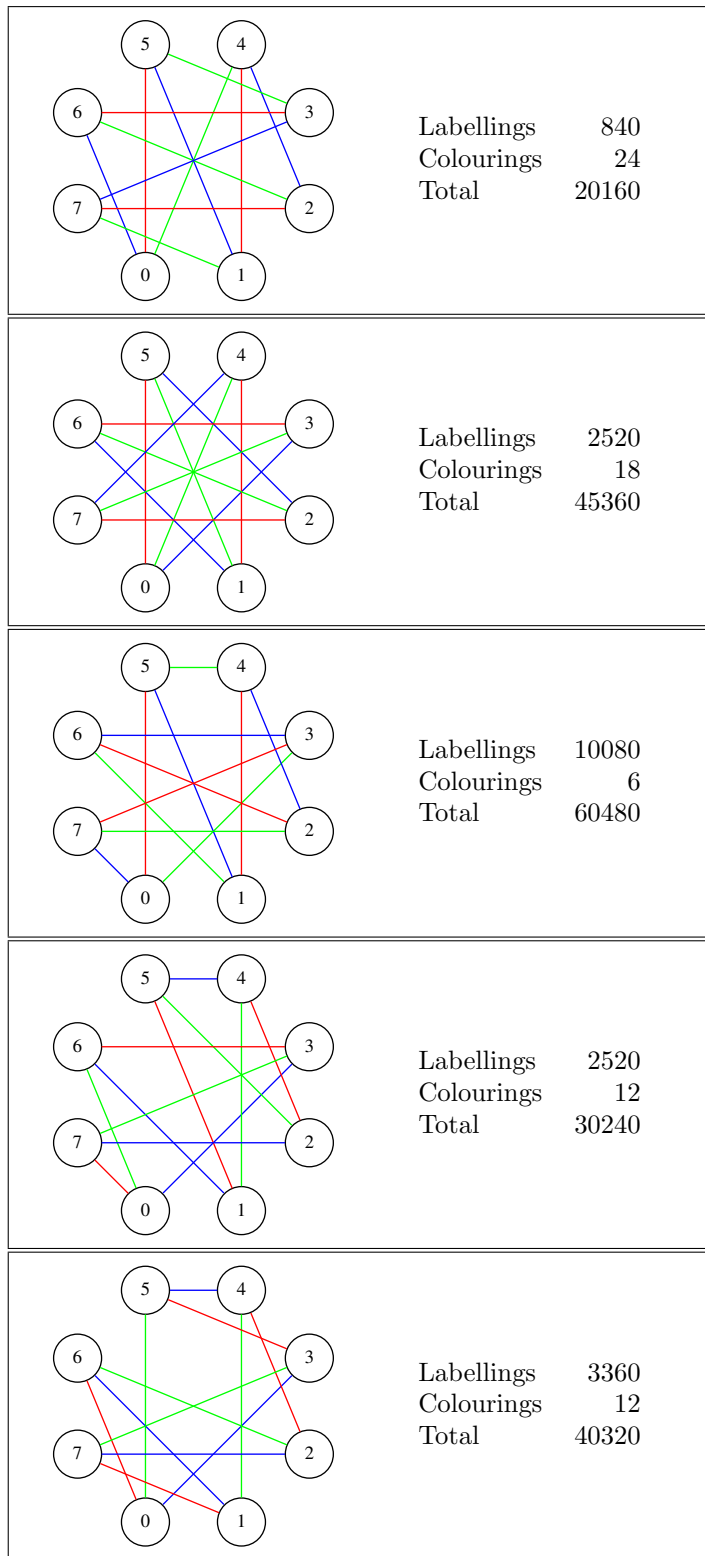


Figure 3: $A006713(4) = 196560$ (depicted colouring and labelling an example only).