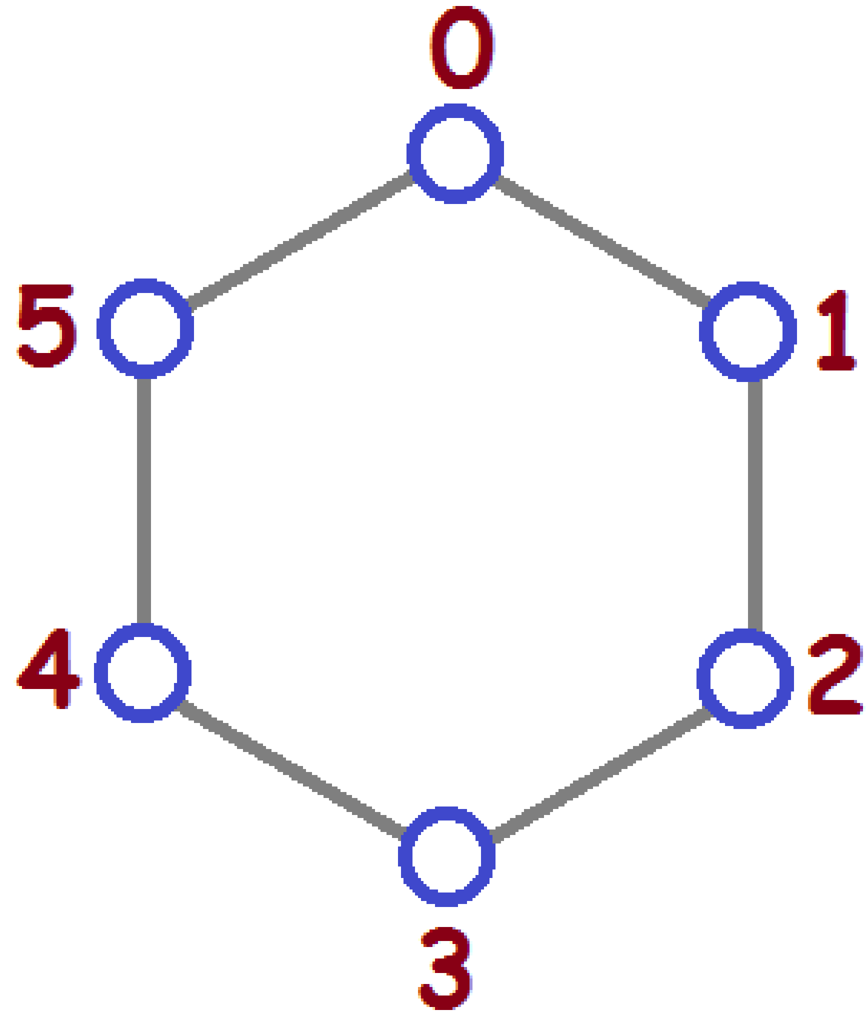
1. Write down the permutations that are the automorphisms of this graph.
2. Write the cycle structure notation for each of the automorphisms.
3. How many independent sets of order 2 does it have?



Announcements:

Assignment #1: due at the beginning of class on Tues. Sept. 23. Any questions?

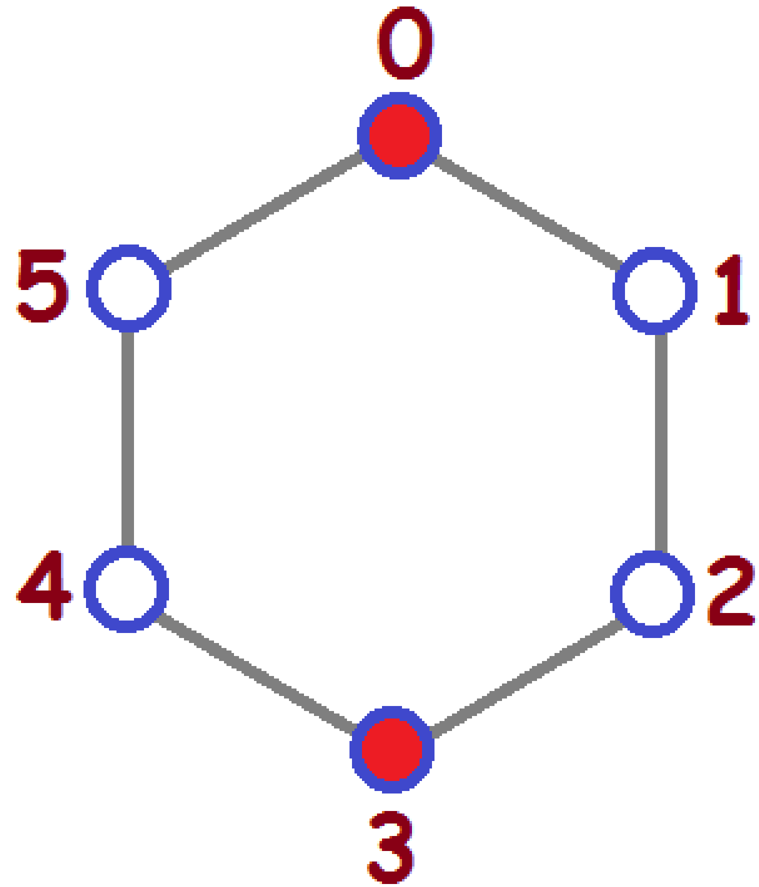
Wed. this week: I have a meeting 1:30-2:30pm. If you need to see me at office hours then you can ask me to stick around at 2:30pm. Or send e-mail, or ask questions in class.

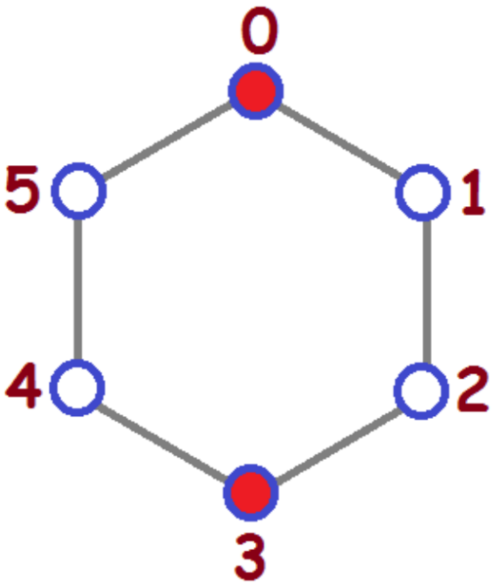
Two independent sets S and T are equivalent if there is an automorphism of G mapping the vertices of S to those in T.

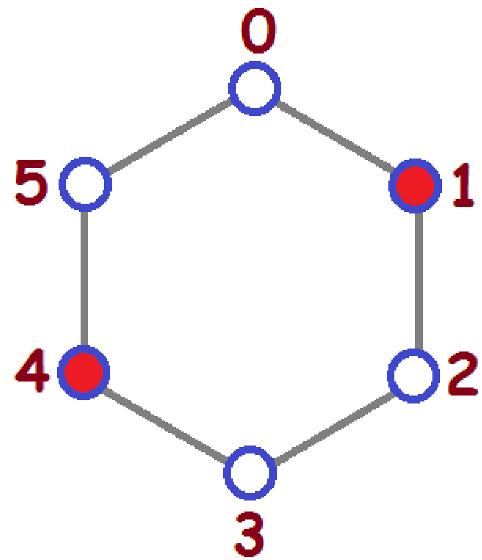
Given a graph G with automorphism group order g and an independent set S such that
G has k automorphisms mapping the independent set S to itself, there will be
g/k different independent sets of the graph that correspond to S.

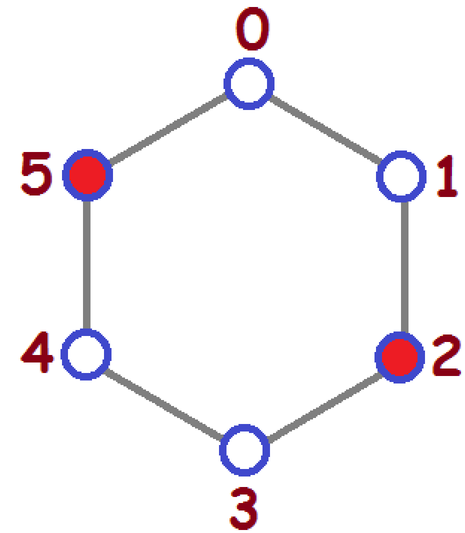
Usually the minimum of these is chosen to be the canonical representative of its equivalence class.

1. Which automorphisms map this independent set to itself?
2. Which other independent sets are equivalent to it?

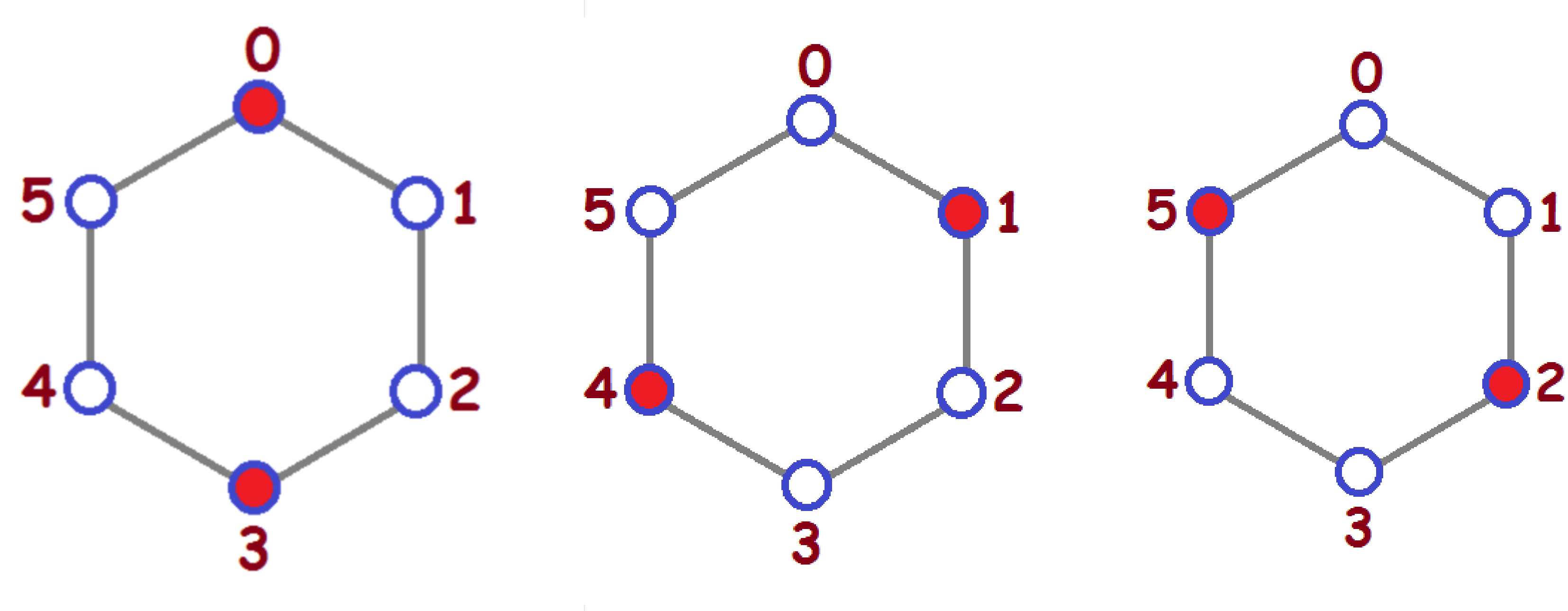






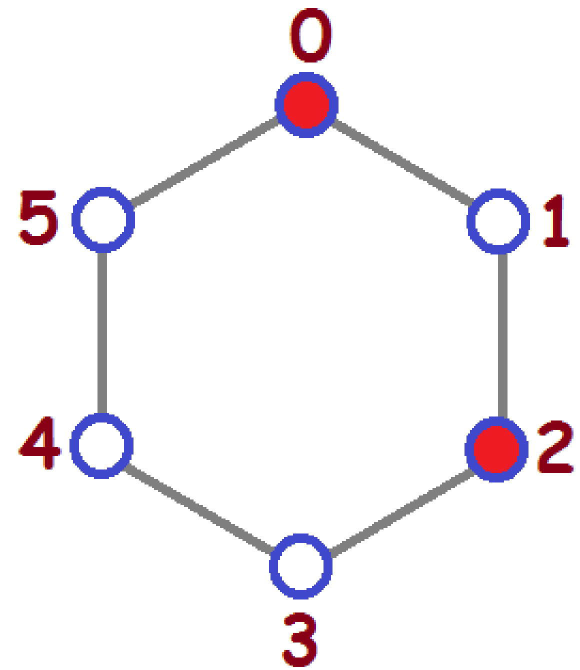


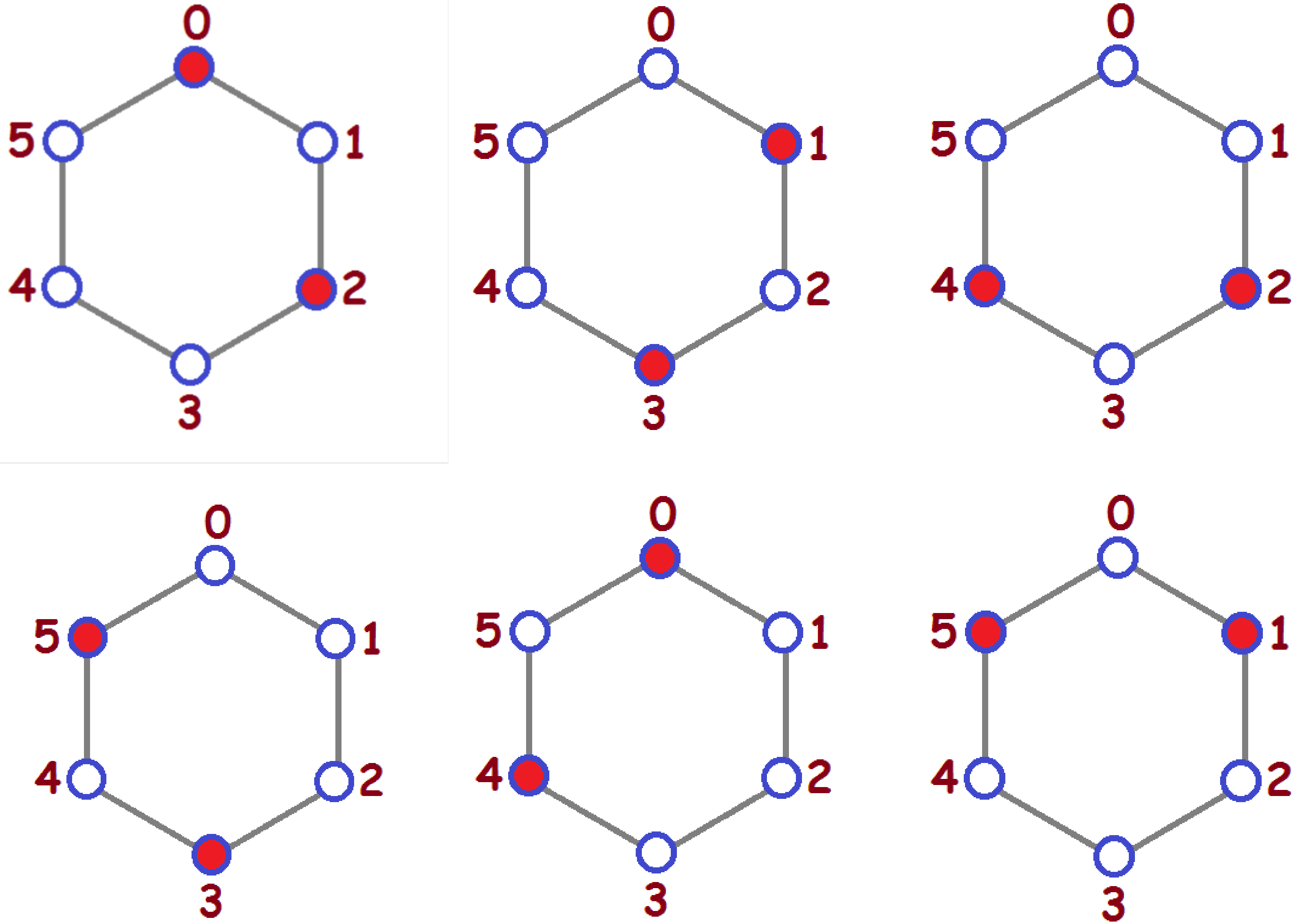
$4 * 3 = 12$



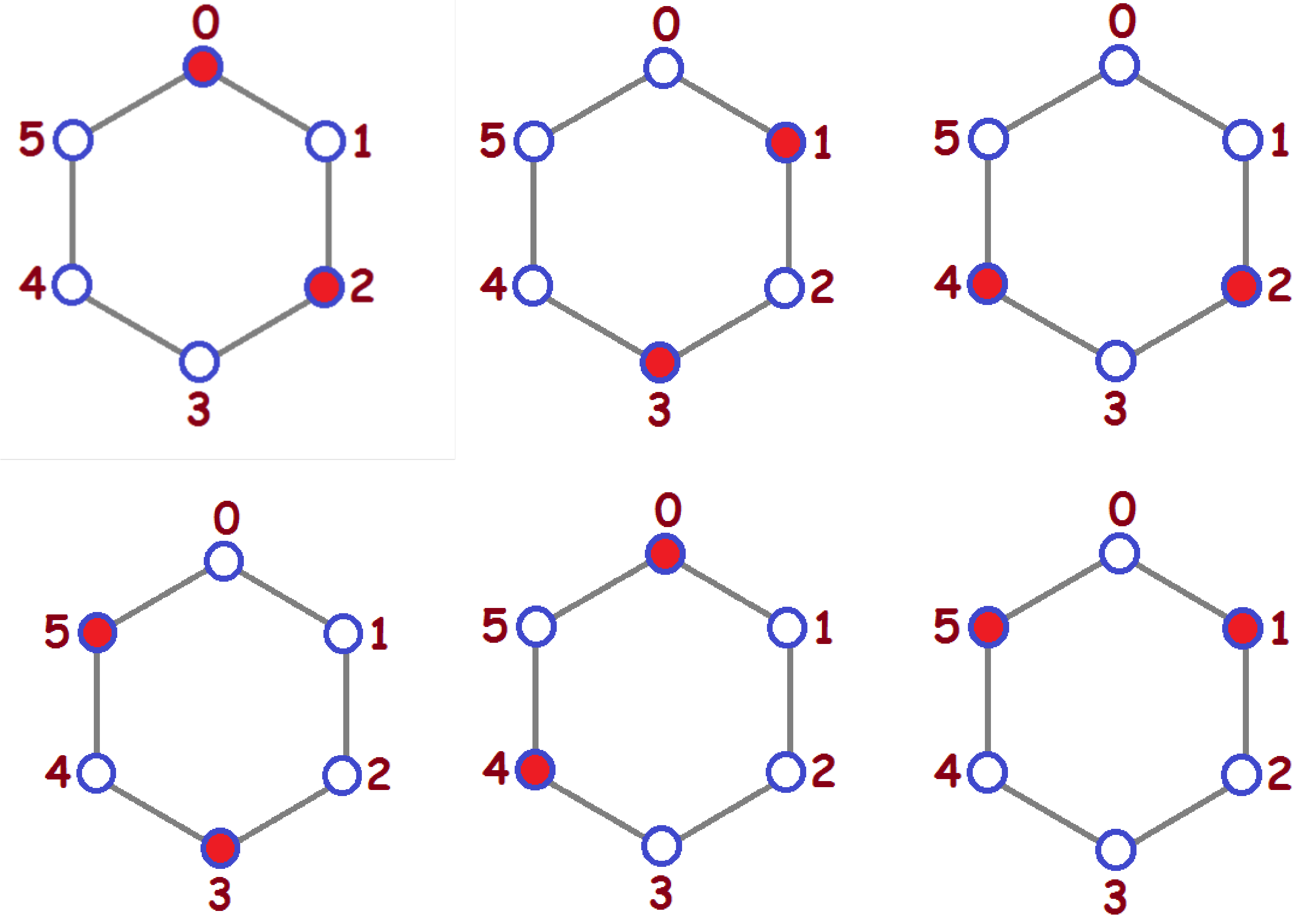
Sorting these lexicographically:
{0, 3} < {1,4} < {2,5}

1. Which automorphisms map this independent set to itself?
2. Which other independent sets are equivalent to it?





$2 * 6 = 12$



Sorting these lexicographically:

{0, 2} < {0, 4} < {1, 3} < {1, 5} < {2,4} < {3,5}

The independent sets of order two fall into two equivalence classes. We could choose the minimum one in each equivalence class as the representative for its class: