CLRS Problem 13.3-2: insert nodes into an empty red-black tree.
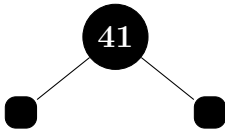
Note: NIL nodes shown as black rounded-corner rectangles.
Insert: 41
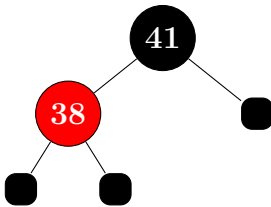Always insert new nodes as red.

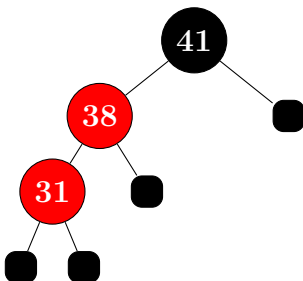Inserting into an emtpy tree, the root must be black.
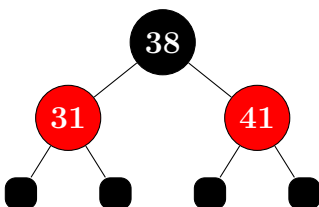

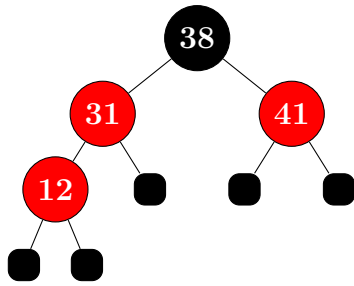**Insert: 38**
Simply insert 38 as a red node.
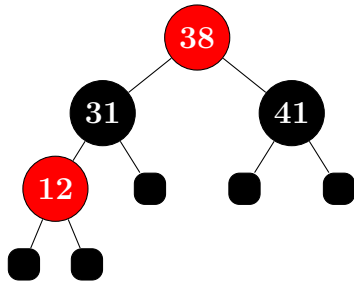

Insert: 31

Uncle (NIL) is black, rotate grandparent in opposite direction of node inserted, in this case, rotate right on node with key 41.
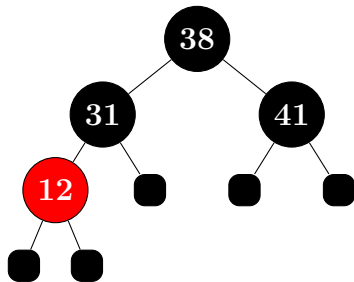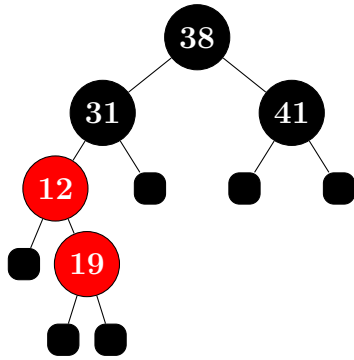

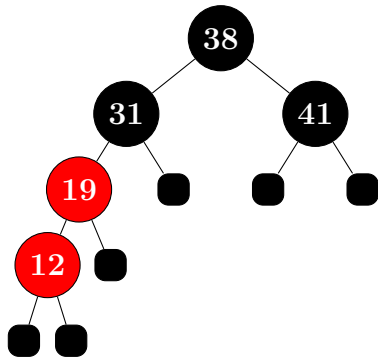**Insert: 12**

Uncle is red, recolor parent, uncle, and grandparent.

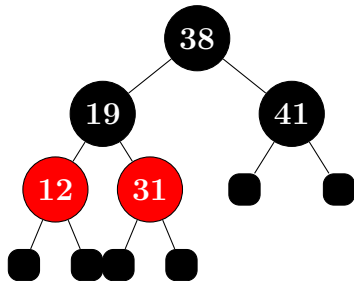The root must be black, recolor it black.
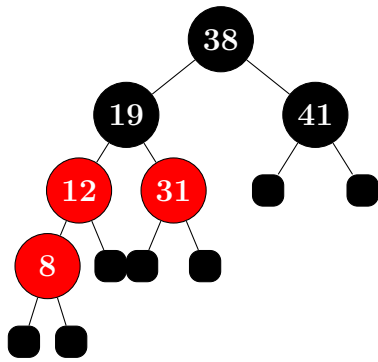
Insert: 19

Uncle (NIL) is black, "triangle" case, thus, rotate 19's parent (node with key 12).

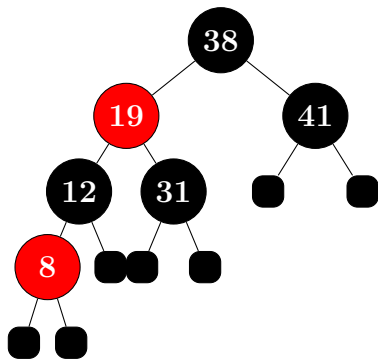Uncle (NIL) is black, "line" case, thus, rotate right on 12's grandfather.

Insert: 8

Uncle is red, recolor parent, uncle, and grandparent.

Done!