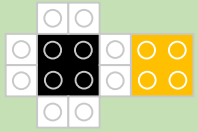
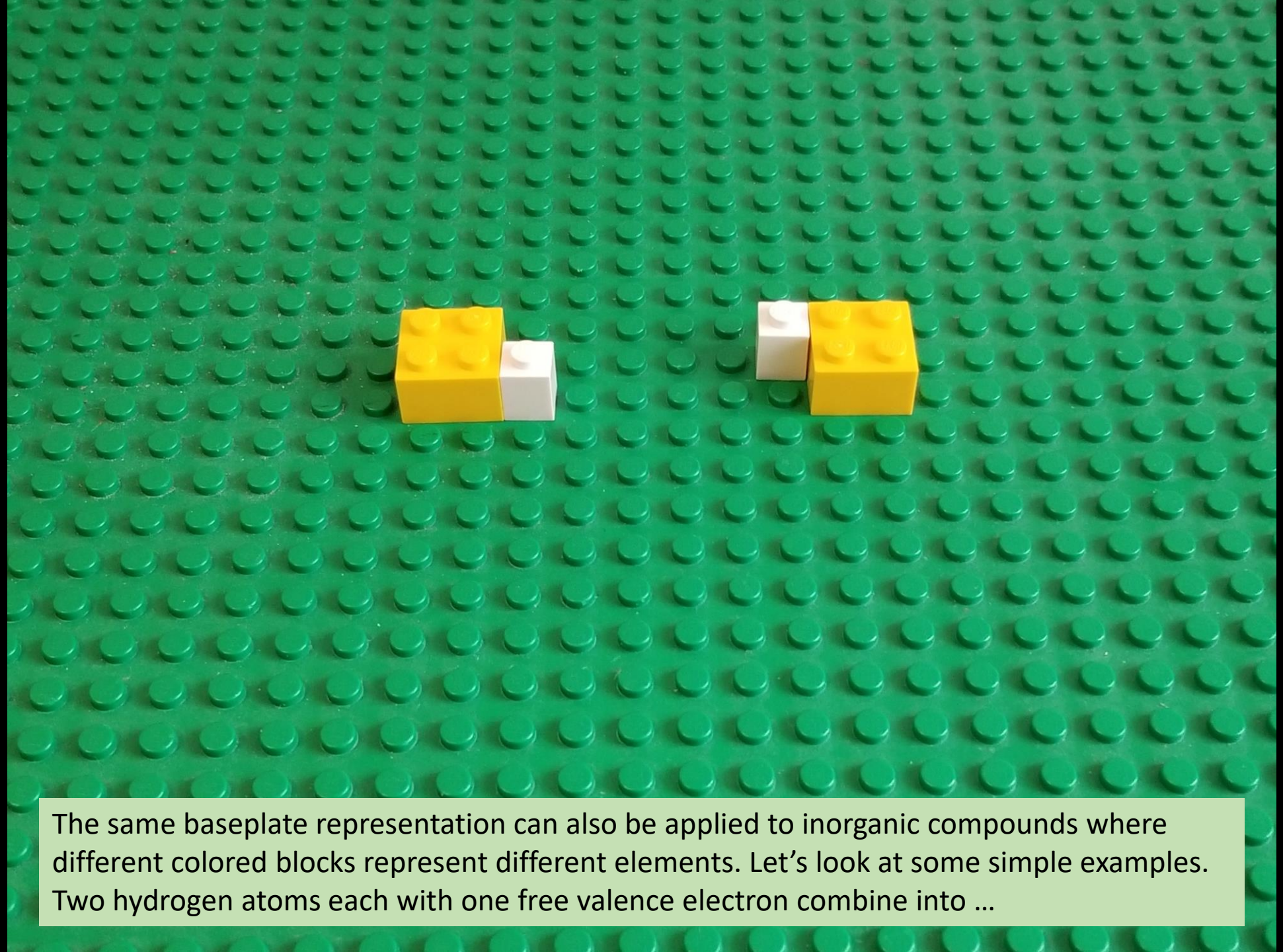


# Organic Chemistry



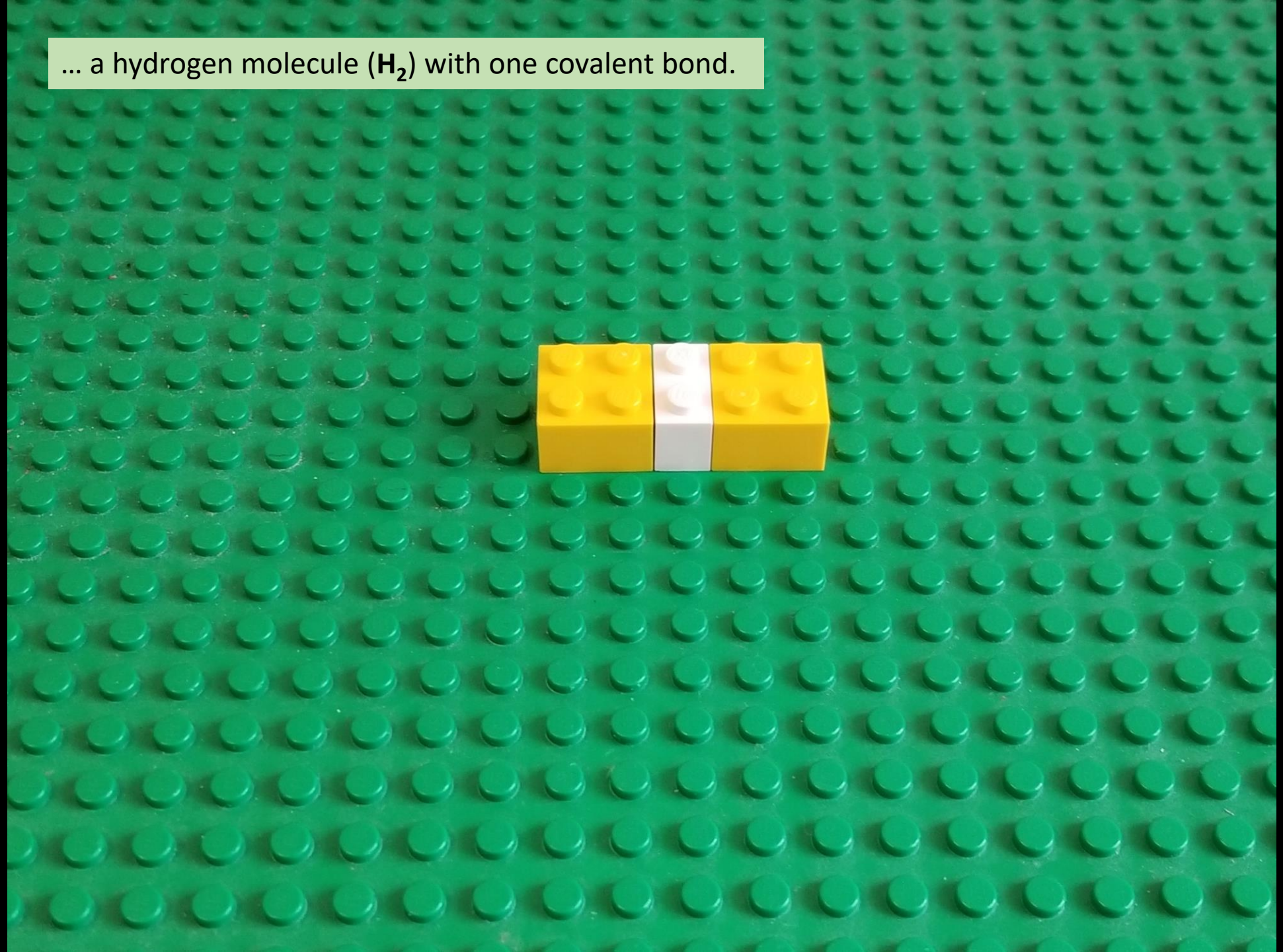
## rick y rick

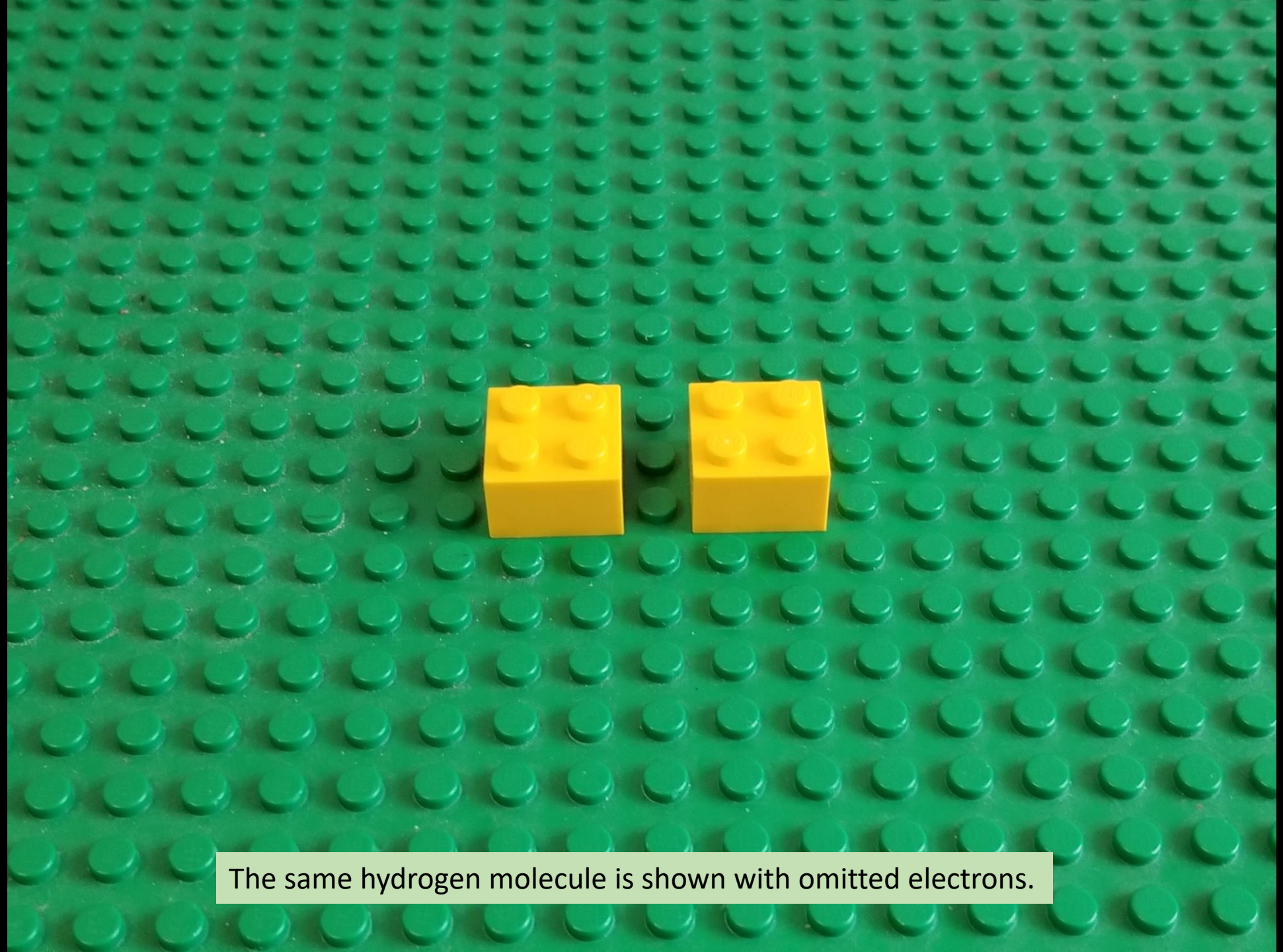
## Part 6



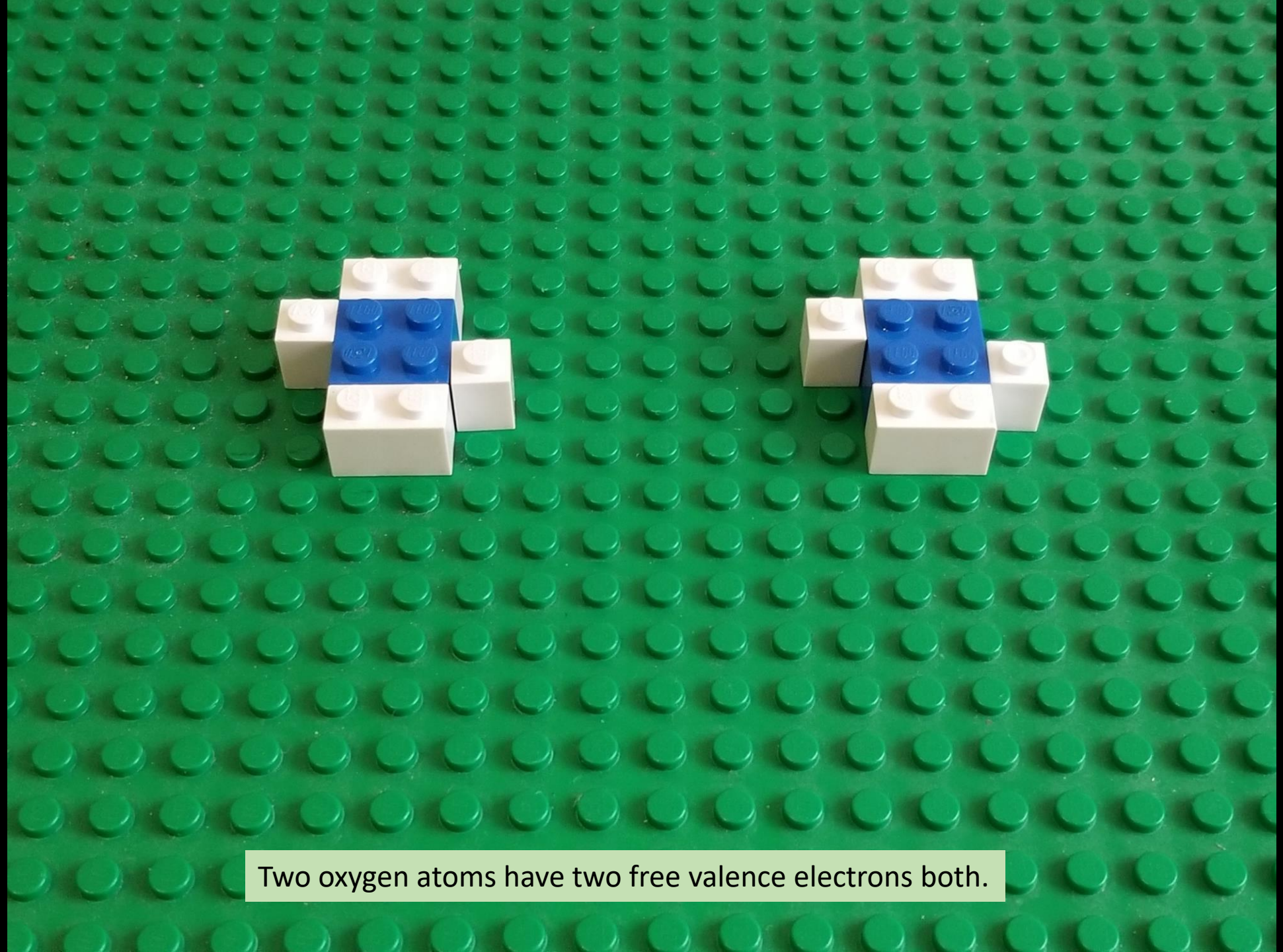
The same baseplate representation can also be applied to inorganic compounds where different colored blocks represent different elements. Let’s look at some simple examples. Two hydrogen atoms each with one free valence electron combine into …

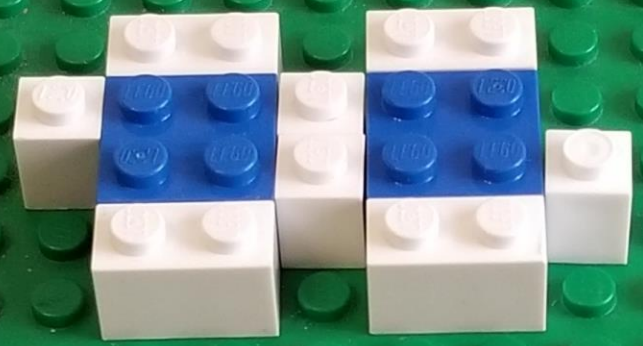
… a hydrogen molecule ($\mathbf{H_2}$) with one covalent bond.



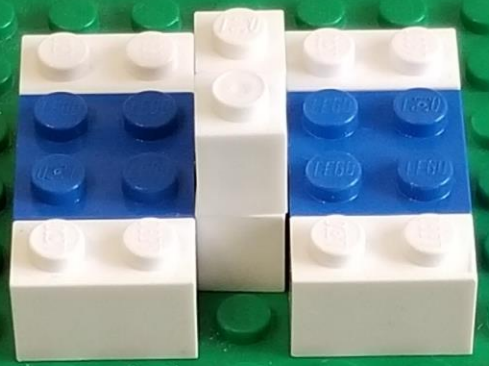


The same hydrogen molecule is shown with omitted electrons.

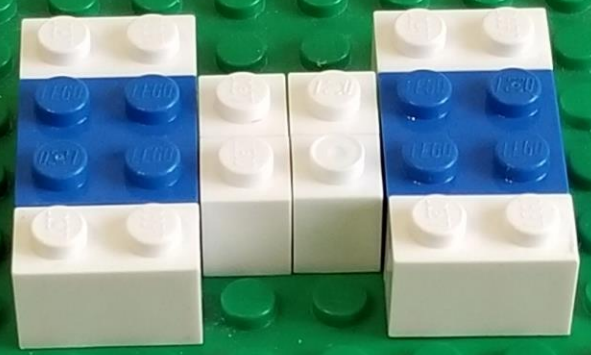

Two oxygen atoms have two free valence electrons both.



One pair of electrons produces a single covalent bond (·**O-O**·).
Each atom has a remaining free valence electron.



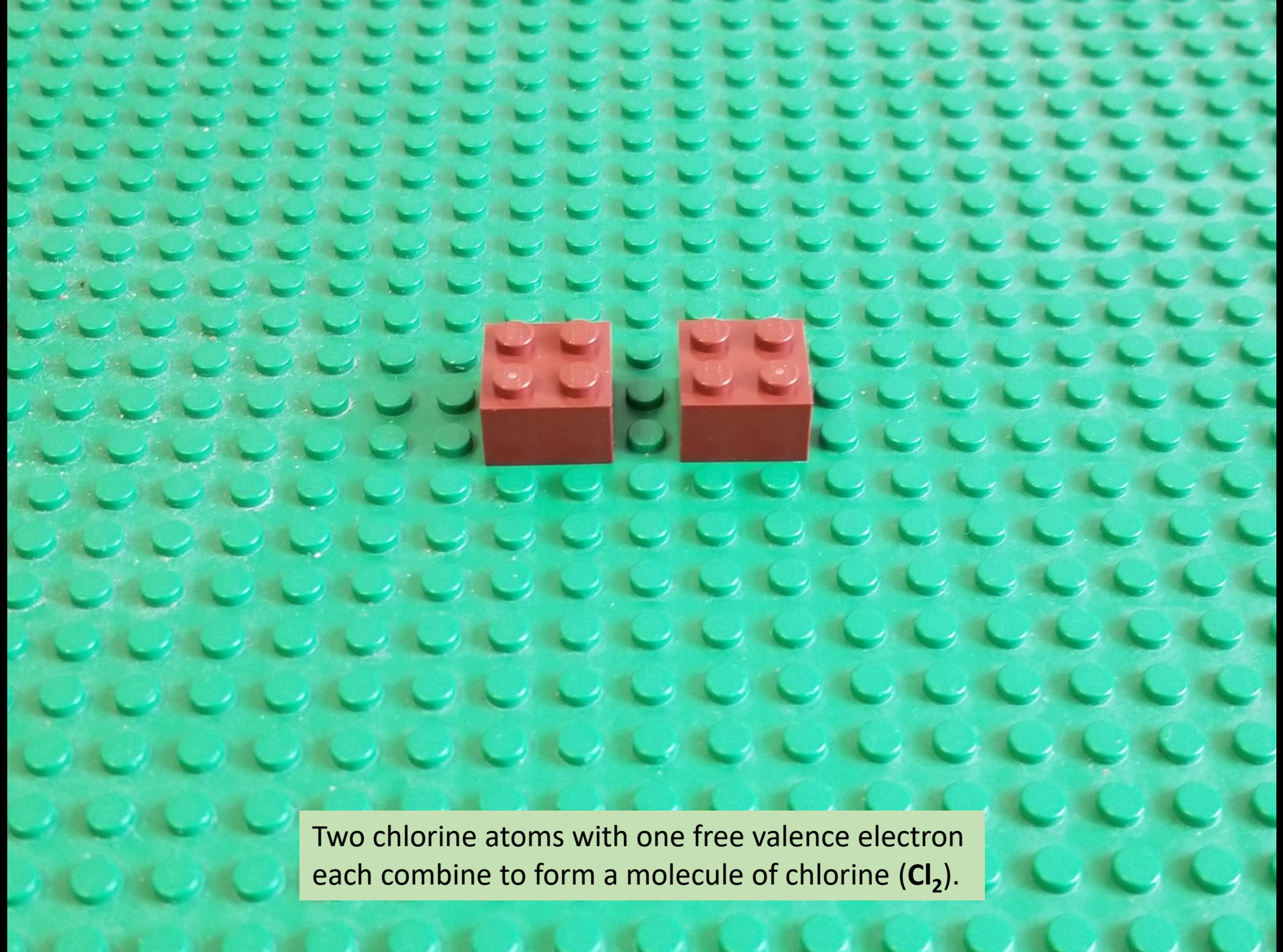
Another pairing produces the second covalent bond. As a result, we have a double bond in a molecule of oxygen (**$O_2$**, **O=O**).



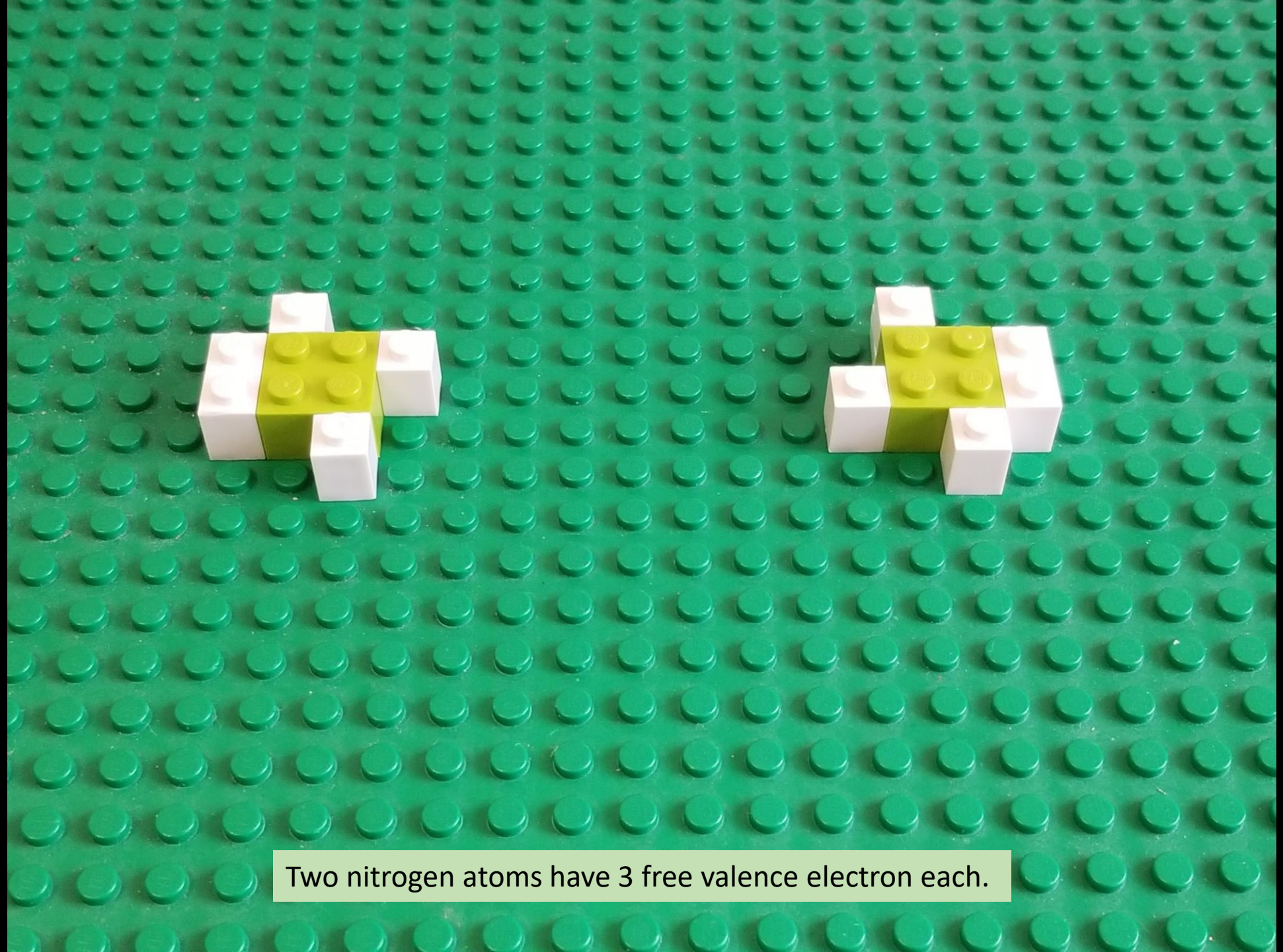
This double bond can be showed using different ways depending on the goals of illustration and …

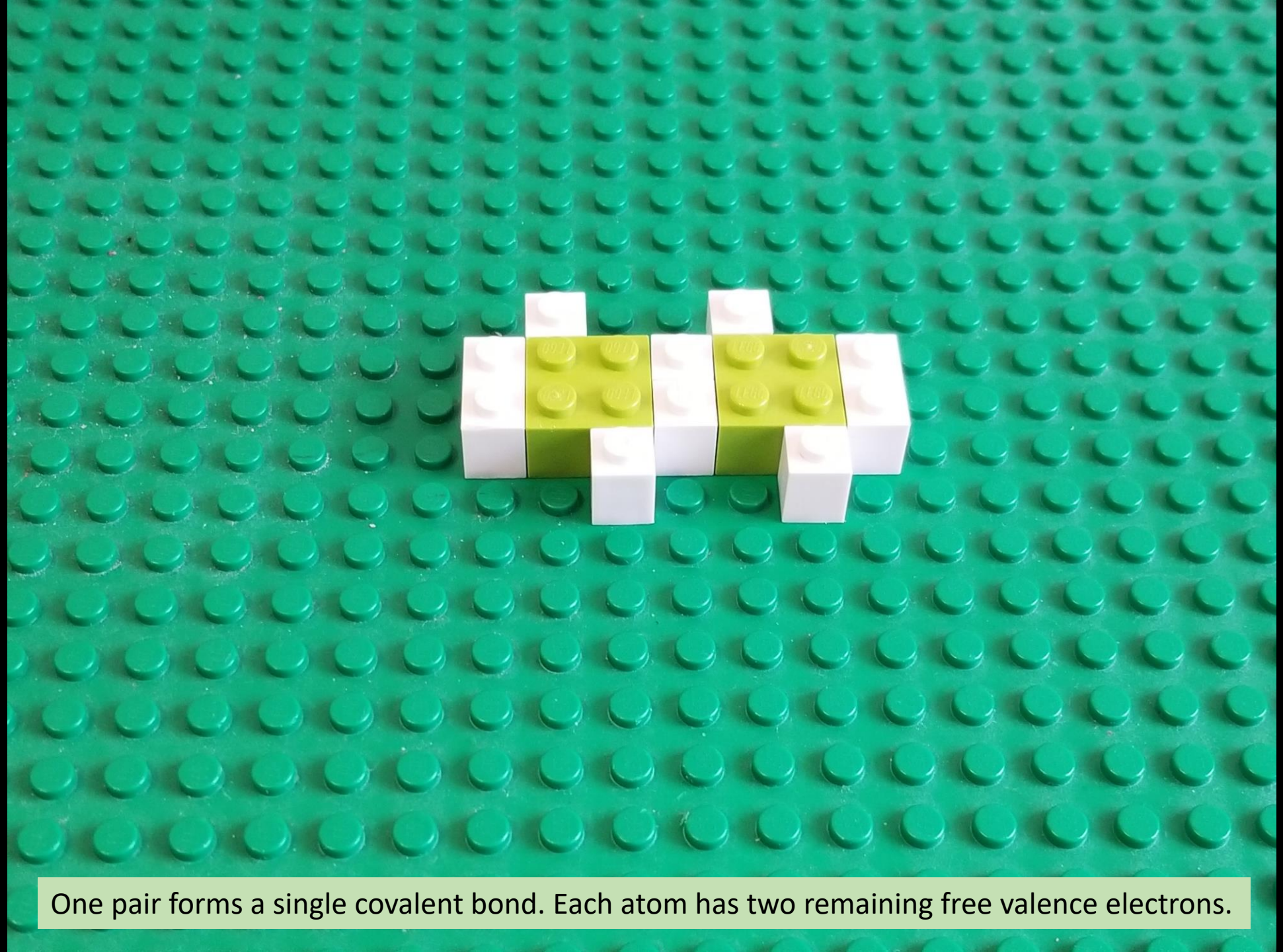
… even omitted completely.

In the future, we will use orange-colored rectangles to highlight double bonds.

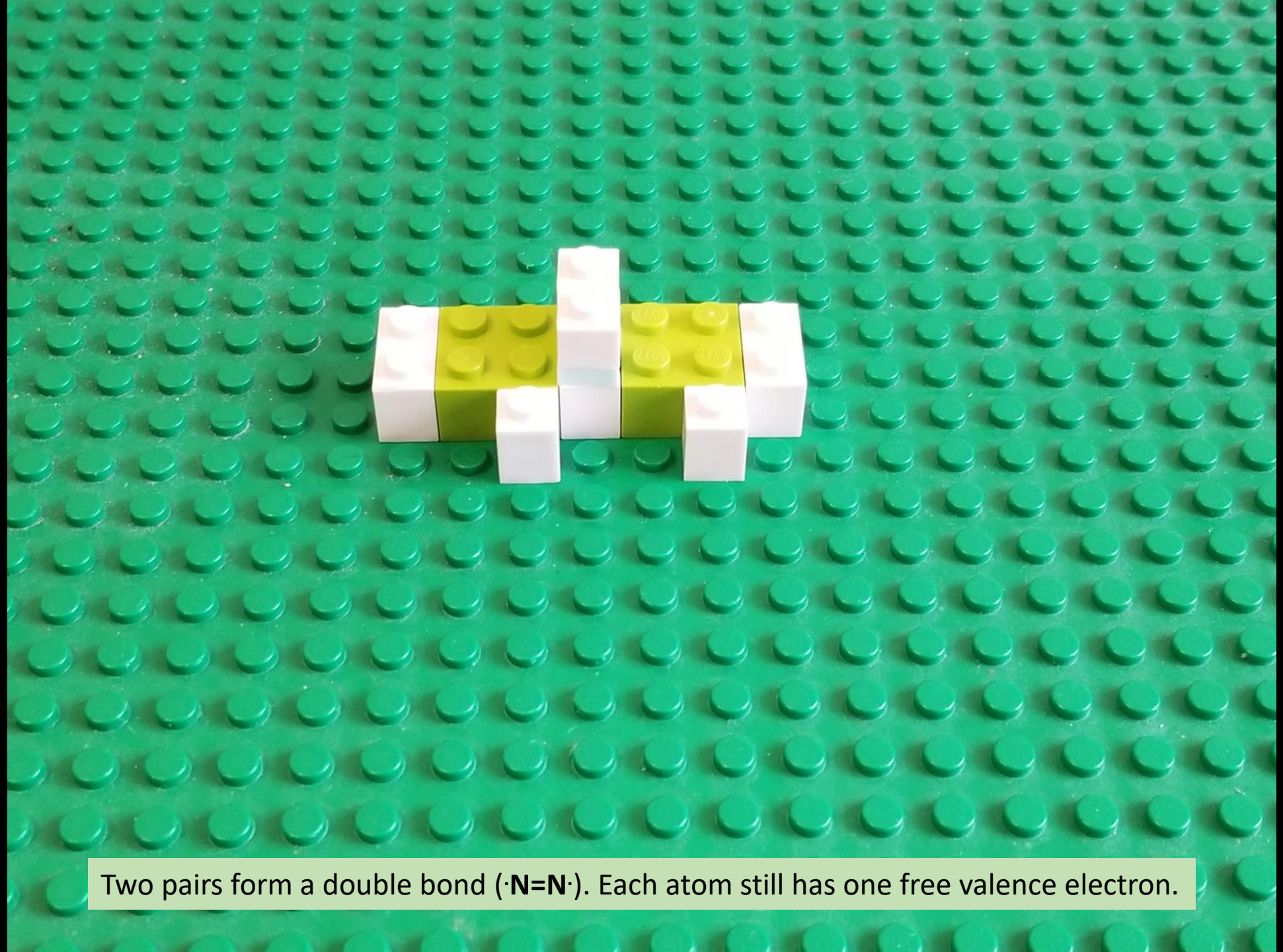


Two chlorine atoms with one free valence electron each combine to form a molecule of chlorine ($\mathbf{Cl_2}$).

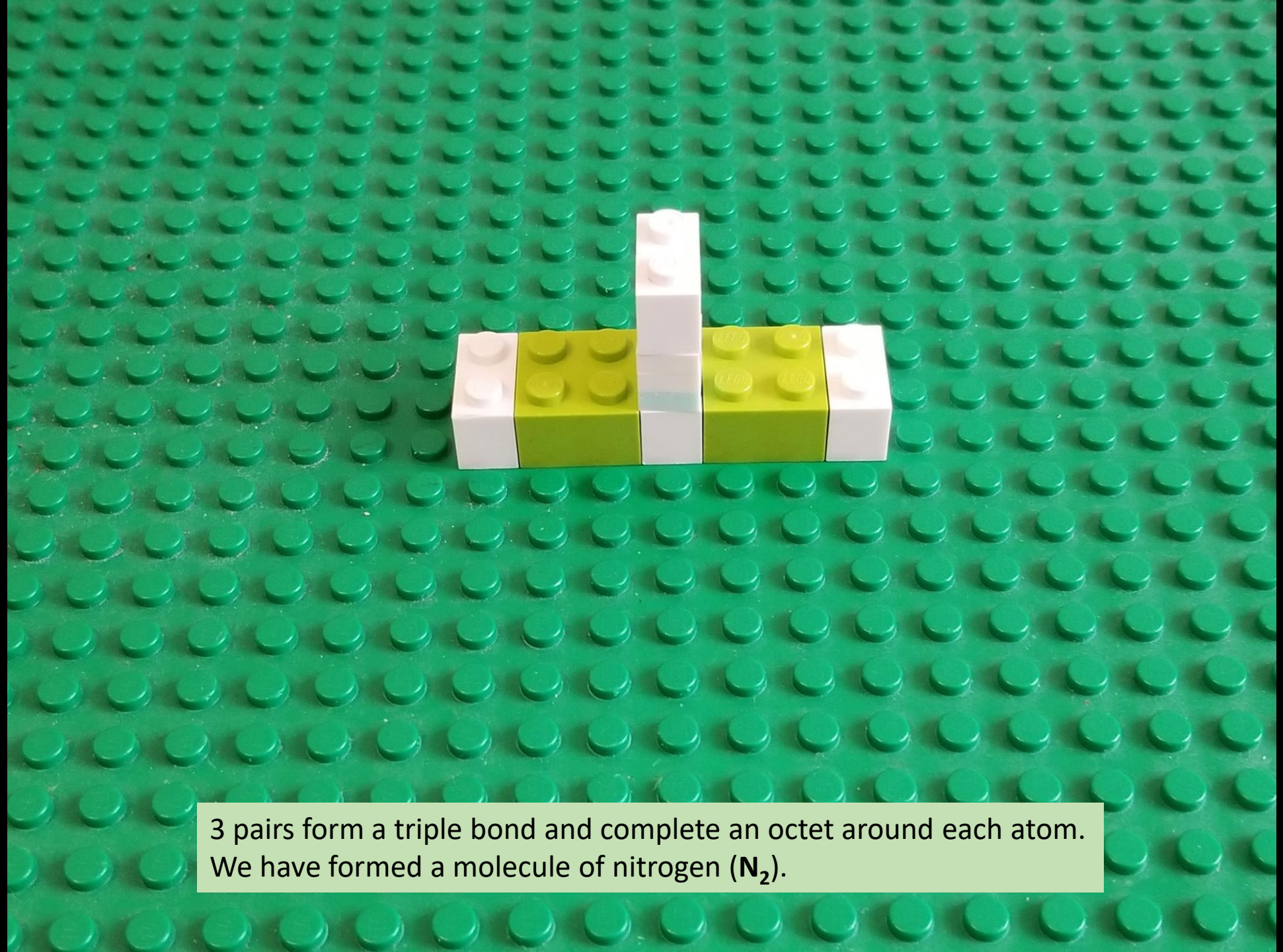

Two nitrogen atoms have 3 free valence electron each.



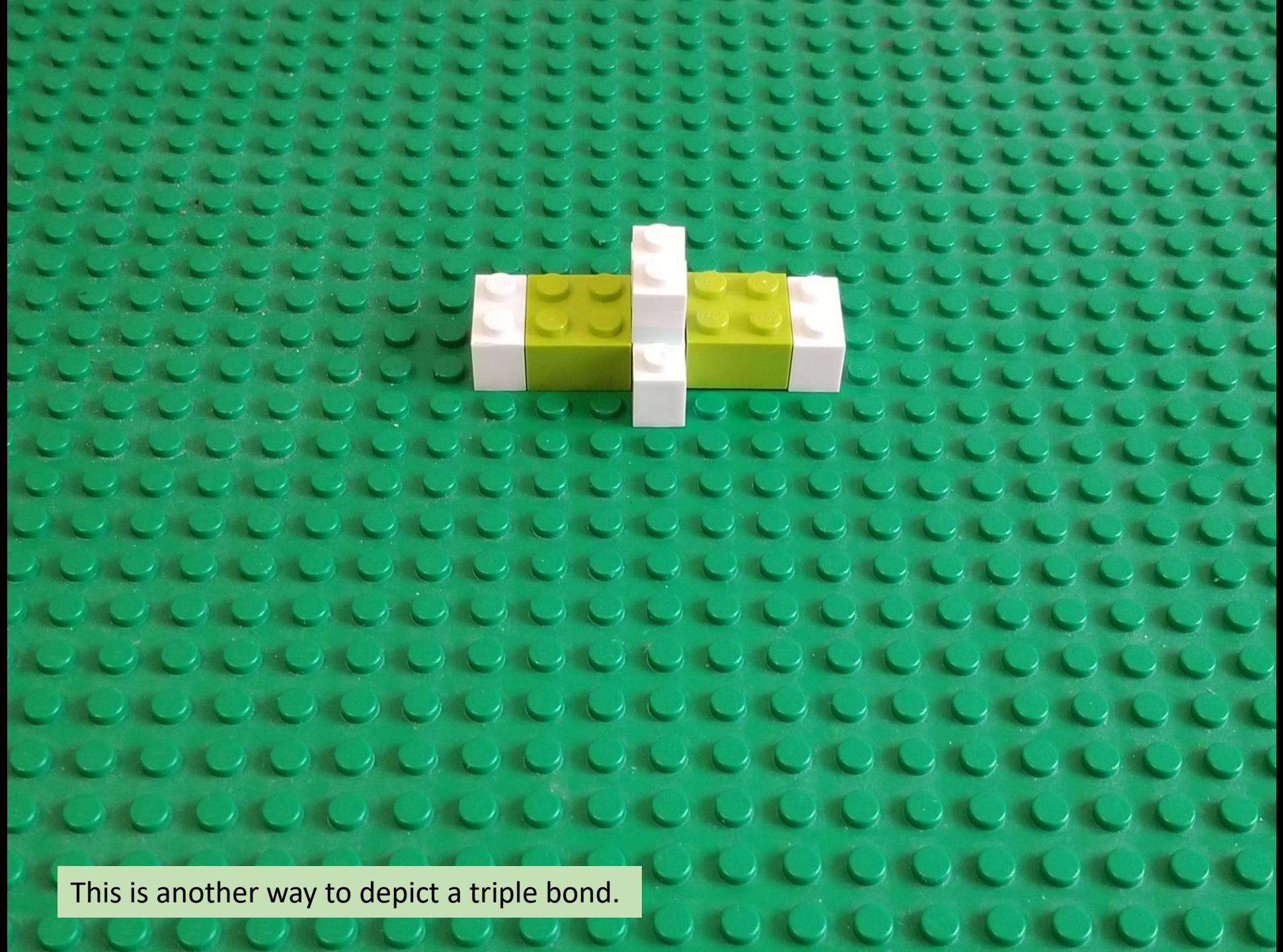
One pair forms a single covalent bond. Each atom has two remaining free valence electrons.



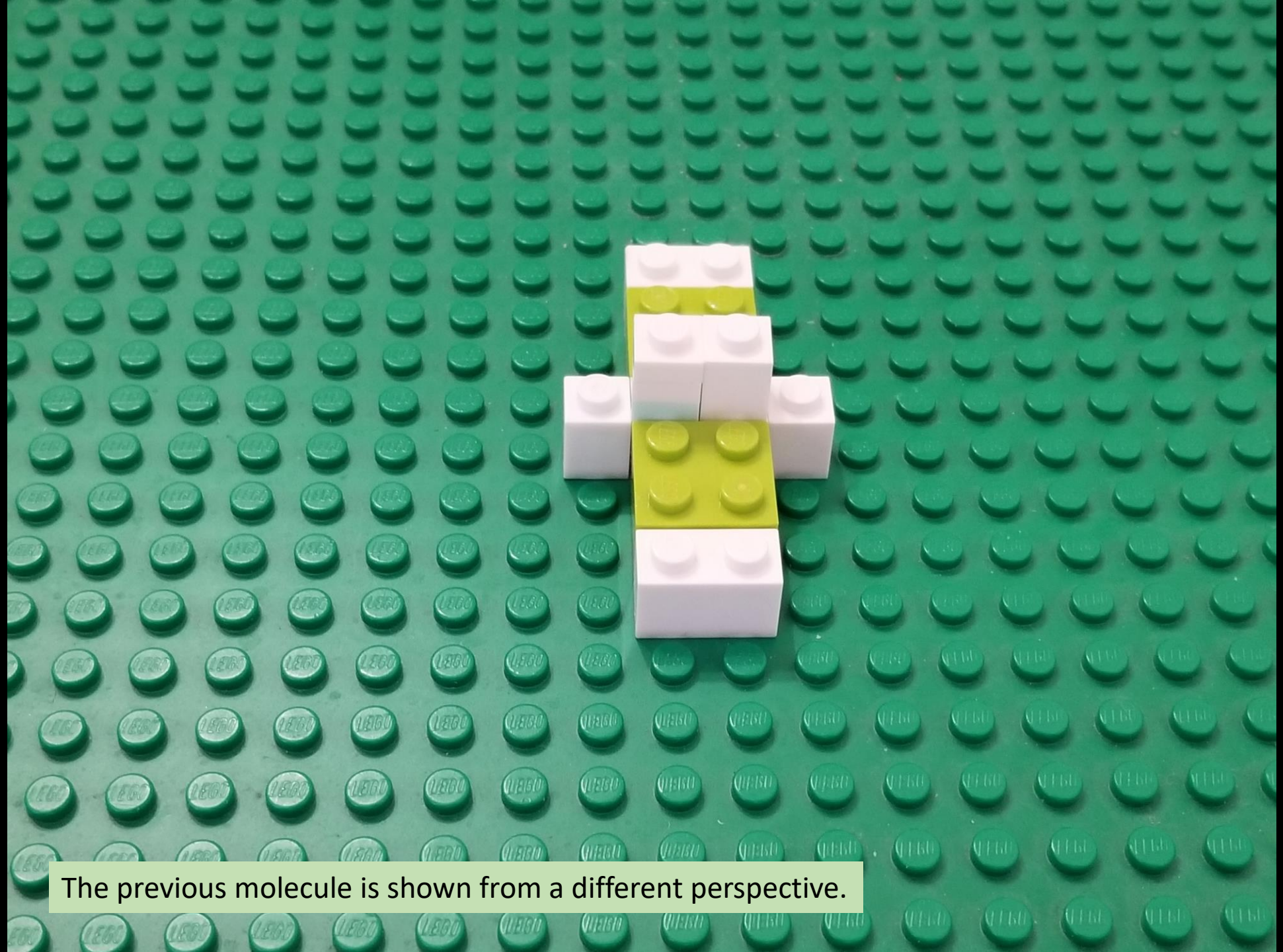
Two pairs form a double bond (·**N=N**·). Each atom still has one free valence electron.



3 pairs form a triple bond and complete an octet around each atom.
We have formed a molecule of nitrogen ($\mathbf{N_2}$).

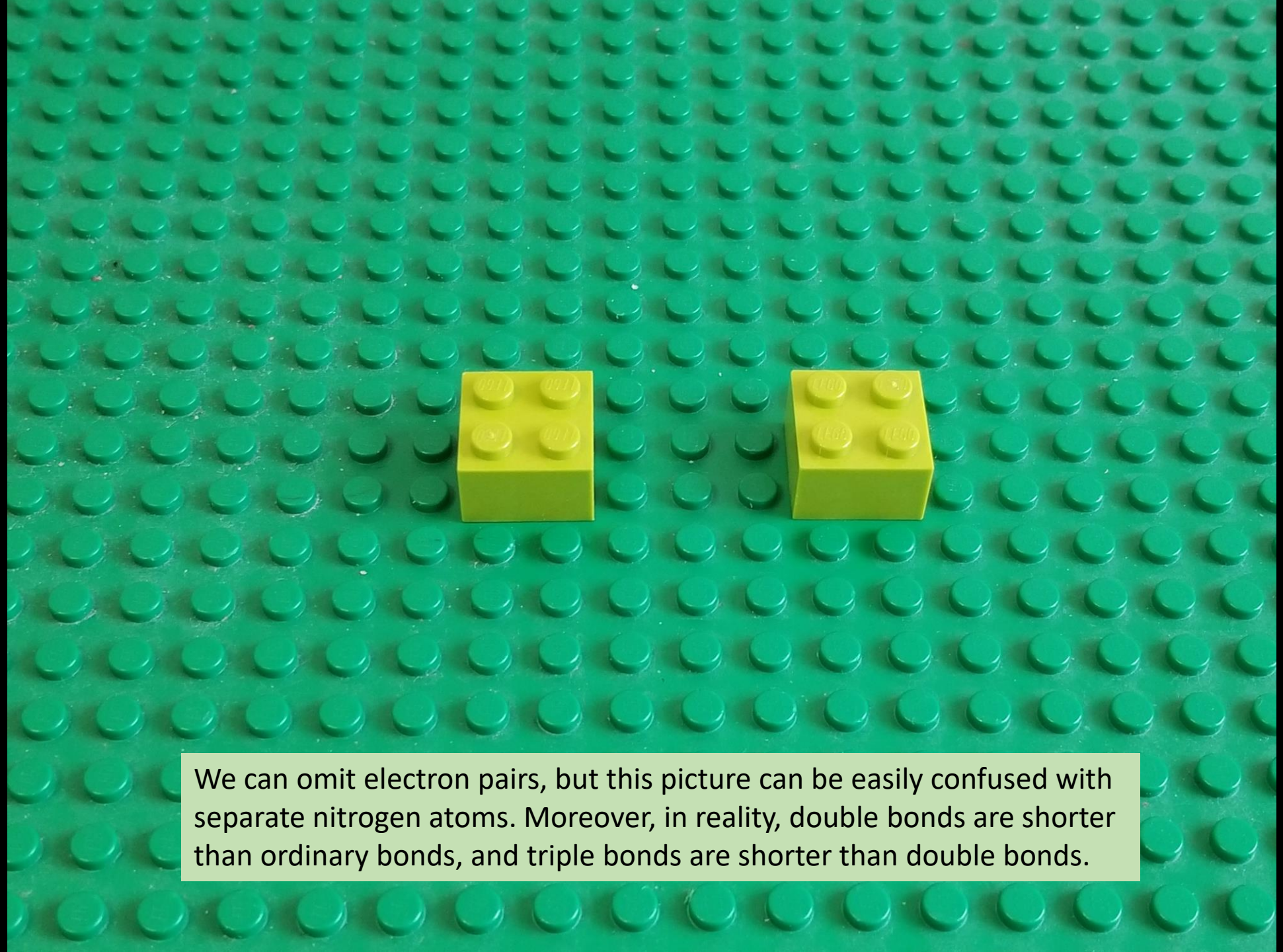


This is another way to depict a triple bond.

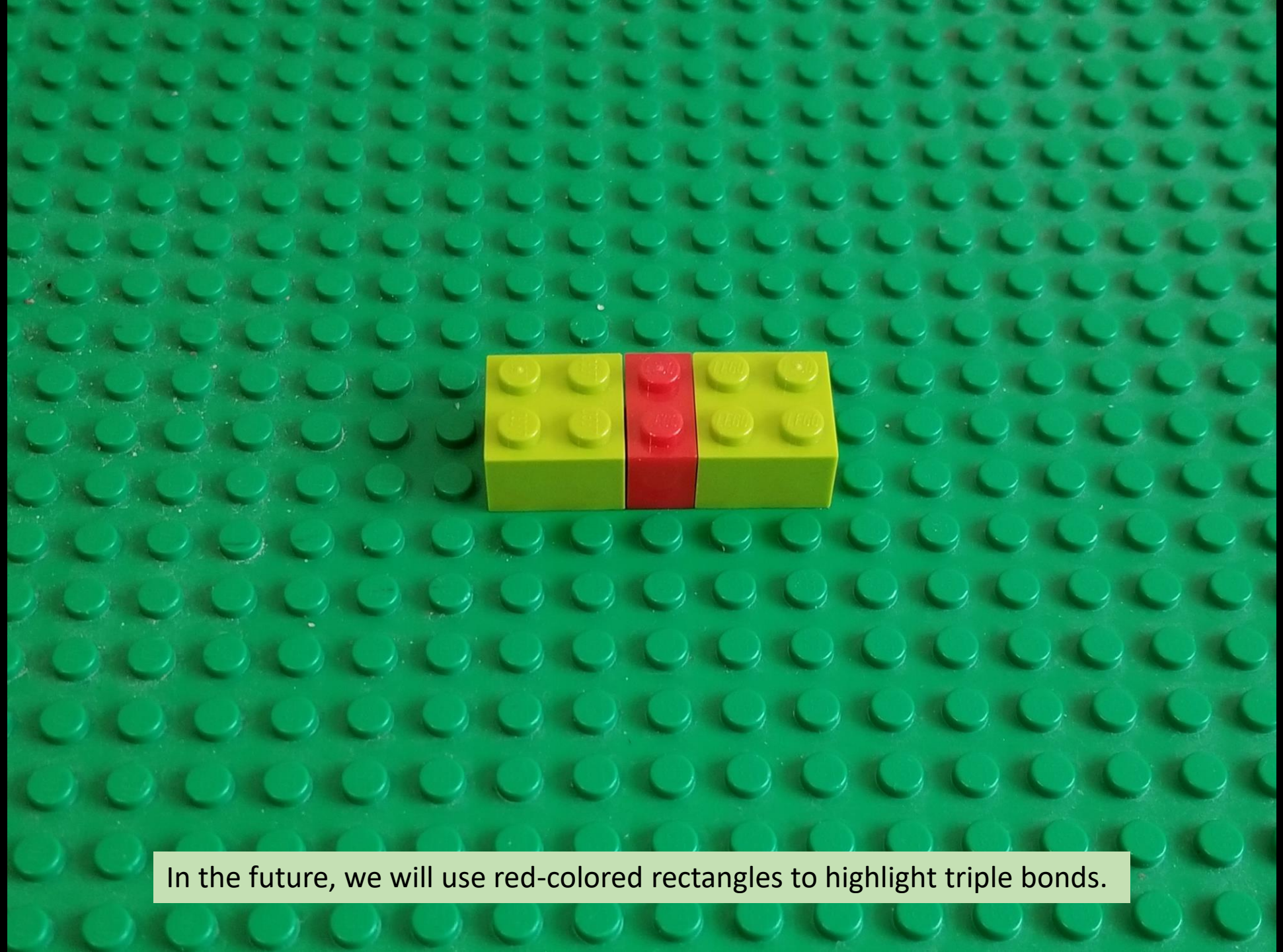


The previous molecule is shown from a different perspective.

This is yet another way to show a triple bond.



We can omit electron pairs, but this picture can be easily confused with separate nitrogen atoms. Moreover, in reality, double bonds are shorter than ordinary bonds, and triple bonds are shorter than double bonds.



In the future, we will use red-colored rectangles to highlight triple bonds.

# Continued with Part 7