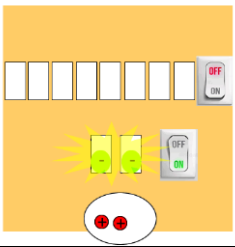
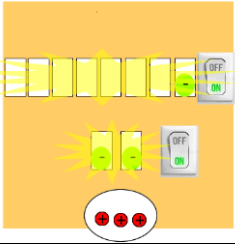
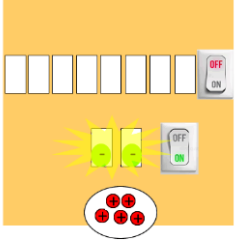
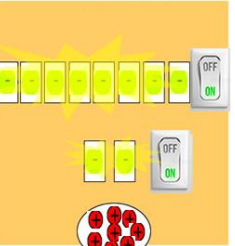
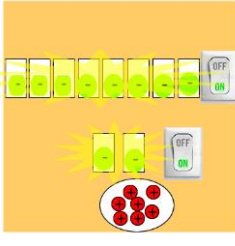
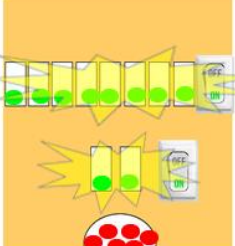
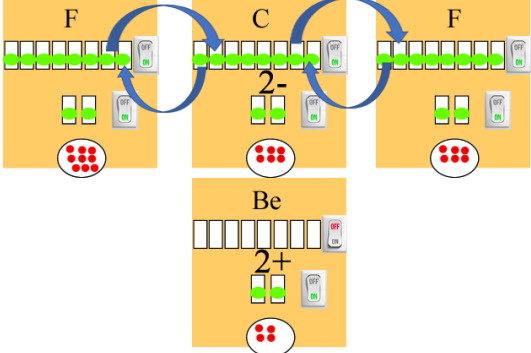
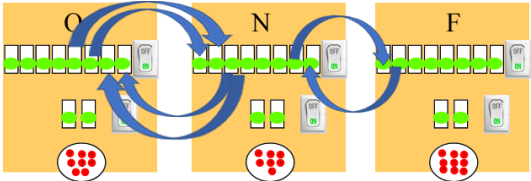
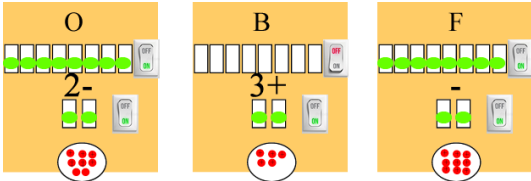
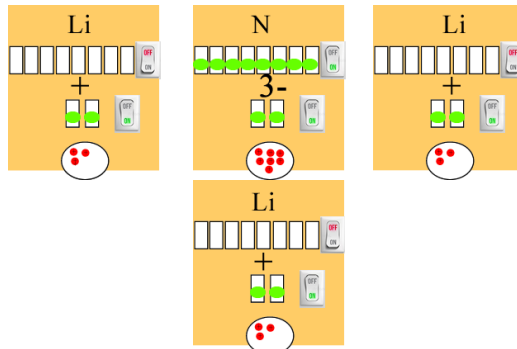


Element	Charge	Atomic number	Diagram
Helium	neutral		
Lithium	neutral		
Boron	3+		
Oxygen	2-		
Nitrogen	3-		
Fluorine	1-		

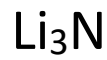
2. Using the least number of atoms of each element given, form stable groups of these atoms. Use the “Apartment Building” analogy of the atom to represent the electron structure of each atom in the group. Complete the table below; the first one is done for you.

Atoms used	Structure
Carbon, fluorine and beryllium	 <p>2 fluorine atoms share one electron each with carbon which shares one electron back with each fluorine. Beryllium donates to electrons to carbon. This causes beryllium to have a charge of 2+ and carbon to have a charge of 2-. Two fluorine, one carbon and one beryllium is the least number of atoms possible.</p> <p style="text-align: center;">BeCF₂</p>
Nitrogen oxygen and hydrogen	 <p>One oxygen atom shares two of its electrons with nitrogen. Nitrogen then shares two of its electrons back with oxygen. A fluorine atom share one electron with nitrogen and nitrogen in turn shares one of its electrons back with the fluorine. A total of three atoms is the least number of atoms possible.</p> <p style="text-align: center;">NOF</p>
Boron and oxygen and fluorine	 <p>Boron donates 2 electrons to oxygen and one electron to fluorine. Boron has a charge of 3+ while oxygen has a charge of 2- and fluorine has a charge of one minus.</p>

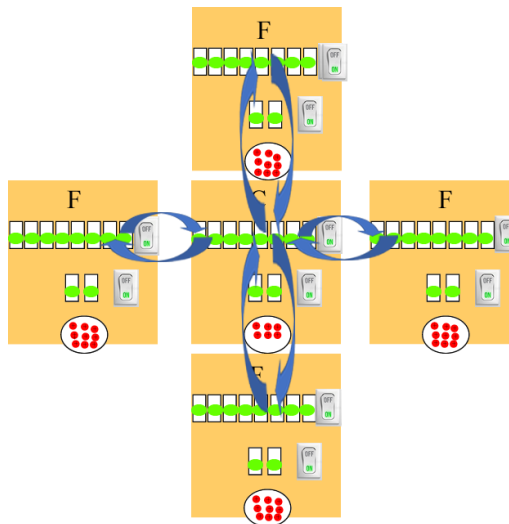
Nitrogen and lithium



Each of the three lithium atoms will donate one electron each to the nitrogen atom. This will cause a charge to develop on each lithium atom of one plus, while the charge on the nitrogen will be 3-. A total of four atoms are needed.



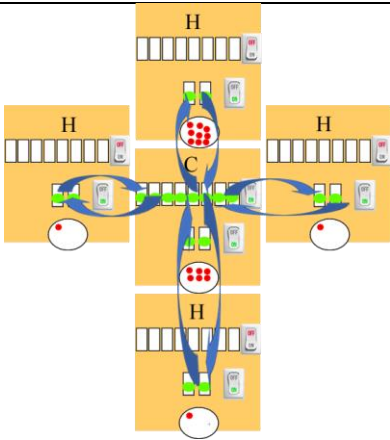
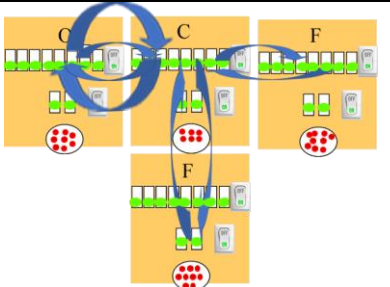
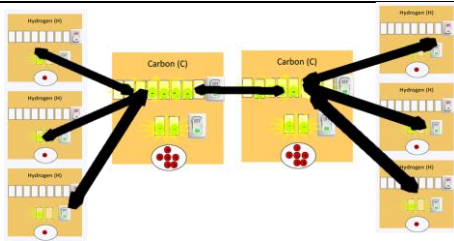
Carbon and fluorine



Since all atoms are non-metals sharing of electrons will take place. Each of the four fluorine atoms will share one electron each with carbon and in return carbon will share one electron with each of fluorine. The minimum number of atoms needed is 5 (four fluorine and one carbon).



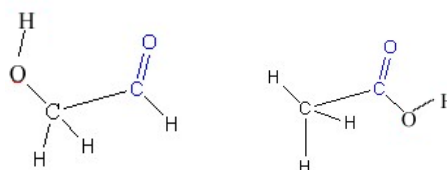
3. Complete the table below. The molecular formula of each substance is given. Your task is to group the atoms so that they are all energy efficient.

Formula	
CH_4	 <p>All atoms are non-metals so they will share electrons. Each of the four hydrogens will share one electron with carbon and in turn carbon will share one electron back with each hydrogen.</p>
COF_2	 <p>All atoms are non-metals so they will share electrons. Each of the two fluorine atoms will share one electron with carbon and in turn carbon will share one electron back with each fluorine atom. The oxygen atom will share two electrons with carbon and the carbon will share two back with the oxygen atom.</p>
C_2H_6	 <p>All atoms are non-metals so they will share electrons. Each of the 6 hydrogen atoms will share one electron with the two carbon atoms and in turn each carbon will share one electron back with each of the three hydrogens. The two carbon atoms will then share one electron each with each other.</p>

BeNOF

Beryllium is a non-metal and so will give up two 2 electrons to the nitrogen atom. In doing so the beryllium atom will gain a charge of 2+ while the nitrogen, having accepted the two electrons, will form a charge of 2-. The nitrogen will then share an electron with the oxygen atom and the oxygen atom will share an electron back. Finally, the oxygen atom will share one electron with the fluorine and the fluorine will share one electron back with the oxygen atom.

C₂H₄O₂



A number of possibilities exist with this formula. Two of which are shown above in line form. Since all the atom are non-metals sharing of electrons will take place.