## Guided Notes Ch. 10 – Lewis Structures and Resonance

### A) Drawing Lewis Structures

1) Sum the valence electrons from all atoms.

2) Write the symbol for the atoms to show which atoms are attached to which, and connect them with a single bond (two dots or a straight line).

➤ Hydrogen is always a terminal atom.

➤ The halogens are always terminal atoms.

➤ carbon is often the central atom.

3) Complete the octet of the atoms bonded to the central atom.

➤ Remember, however, hydrogen can only have two electrons.

4) Place any leftover electrons on the central atom, even if doing so results in more than an octet.

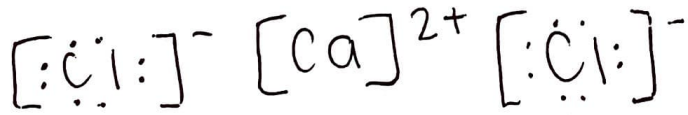
5) If there are not enough electrons to give the central atom an octet, try multiple bonds.

➤ A double bond is two shared pairs of electrons.

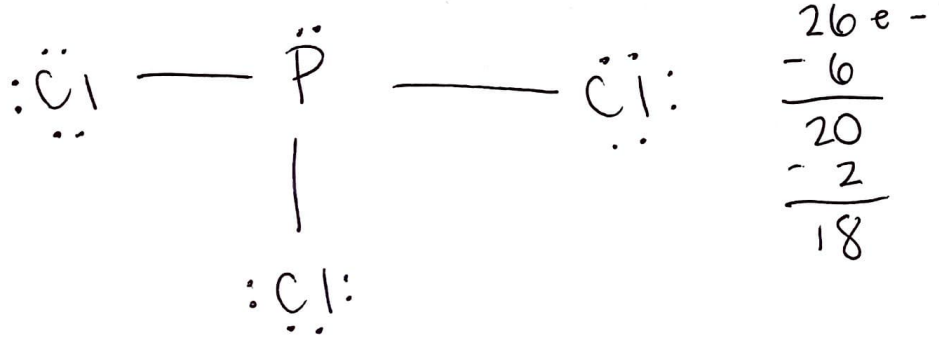
➤ A triple bond is three shared pairs of electrons.

### B) Use your guided notes to draw the Lewis Structure for ionic and covalent compounds.

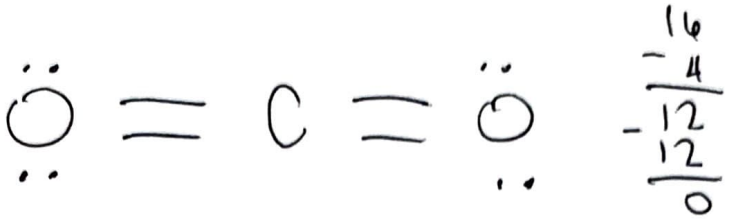
➤ Calcium chloride (ionic compound—electrons are transferred



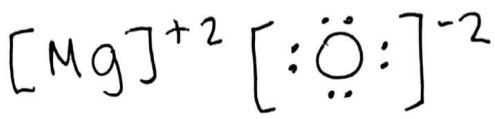
➤ Phosphorous trichloride (covalent compound—electrons are shared



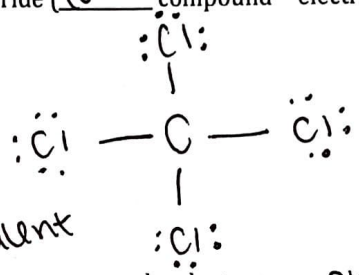
➤ Carbon dioxide (covalent compound—electrons are shared



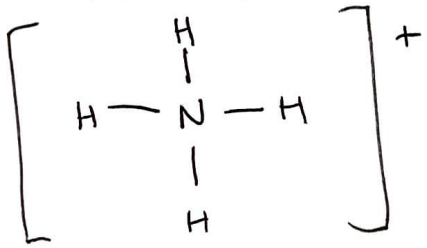

➤ Magnesium Oxide (ionic compound—electrons are transfered




➤ Carbon tetrachloride (covalent compound—electrons are shared



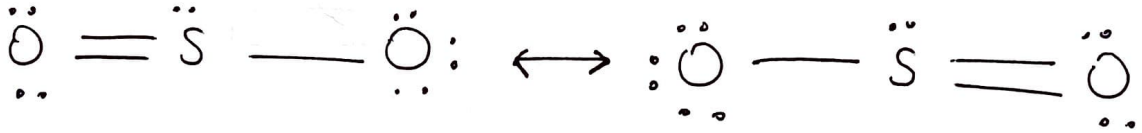
➤ NH4+ ion (covalent compound—electrons are shared



**C) For some molecules more than one equivalent lewis structure can be drawn.**

We find experimentally that all the valid Lewis Structures are equivalent and the bond links and the bond strengths are equal also.

➤ Draw the two valid Lewis Structures for sulfur dioxide:



These are resonance structures.