Name _____ Date _____

Covalent Compounds

- _____ are able to _____ valence electrons.
  - Since they don't gain or lose electrons, they do not develop a charge and _____ _____.
- When atoms join together by sharing valence electrons they form _____ _____.
  - Co-workers share the work
  - Co-valent compounds share valence electrons
- When atoms share electrons, the _____ of each atom are _____ to the _____ of the _____ _____.
  - The shared electrons will actually _____ about the nuclei of _____ _____.
- _____ _____ of shared electrons equals _____ covalent _____ and is represented by one _____.
  - H – H O = O N ≡ N
- _____ _____ can form covalent bonds.
- Just like in Ionic Compounds, atoms form chemical bonds to _____ their _____ energy _____ so they can become _____.
  - All atoms, except hydrogen, become stable when they meet the _____ _____ by having 8 valence electrons.

Number of Covalent Bonds

- The _____ of _____ _____ a non-metals _____ in order to fill its outer energy level will equal the _____ of _____ _____ formed by a non-metal.
- Hydrogen _____ only _____ more valence electron, so it can only _____ ____ covalent bond.
- _____ _____ _____ valence electrons to meet the octet rule, so it can _____ _____ covalent bonds.
  - The fact carbon can form 4 covalent bonds, makes it _____ _____ in the amount of structures it can form, which is why it is so crucial to living organisms.
  - There is an entire branch of chemistry that just studies carbon-based molecules produced by living organisms, called _____ _____.
  - Remember the four _____ groups from Biology? All of them contain _____.
  - Carbon's ability to form form four covalent bonds, allows it to form long _____ _____ in a variety of ways. (H, O, and C)
  - Carbon based molecules often form _____ _____. When drawn, the C is implied at the junction of each line in the ring.
- _____ and _____ have 5 valence electrons and so can form _____ covalent bonds.

- _____, _____ and selenium have 6 valence electrons and will form _____ covalent bonds.
- All of the _____ have 7 valence electrons so they can only form ____ covalent bond.
- A quick way to determine the number of covalent bonds a non-metal can form is by using its _____ _____.
    - Just ignore the charge.

Molecules

- Because electrons are shared and not transferred, there are _____ _____ involved and the compounds formed are called _____.
    - They are still compounds because they are formed when two or more different atoms are chemically combined, but they are a special group of compounds.
- Some of the _____ can form covalent _____ with _____ _____ to themselves.
    - Nitrogen, for example can form 3 covalent bonds with another nitrogen atom.
- When an atoms bonds with itself, it's called a _____ _____.
    - There are ____ diatomic molecules: _____, _____, _____, _____, _____, _____, and _____.

Naming Covalent Compounds and Writing Formulas

- Some pairs of non-metals can form more than one type of molecule.
    - NO NO_2 NO_3 N_2O_5
    - Nitrogen and oxygen can form 4 different molecules.
    - If we followed the same naming rules as ionic compounds, they would all be named nitrogen oxide.
- When naming covalent molecules, we use _____ _____.

1 Mono	6 Hexa
2 Di	7 Hepta
3 Tri	8 Octa
4 Tetra	9 Nona
5 Penta	10 Deca

- As a general rule, the _____ prefix is _____ used _____ the _____ _____, but is used on the second atom.
    - CO Carbon Monoxide
- Also, while the first atom's name remains exactly the same, once the prefix is added, the _____ of the _____ atom's name is changed to "_____".
    - H_2O Dihydrogen Monoxide
- Simply _____ the _____ to write the _____ for each atom in the molecular formula and just remember that ones are not written as subscripts.
    - Dinitrogen Pentoxide N_2O_5