Name
AP Chemistry
Covalent Compounds

Objectives:
1. How do covalent bonds form?
   a. Students will be able to indicate if a chemical formula is of a covalent nature.
   b. Students will be able to provide the name and formula of a covalent substance.

Note:
Mono is dropped on the first atom only

## Table: Prefix + Name vs. Prefix + root + ide

<table>
<thead>
<tr>
<th>First Atom</th>
<th>Second Atom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mono = 1</td>
<td>Hexa = 6</td>
</tr>
<tr>
<td>Di = 2</td>
<td>Hepta = 7</td>
</tr>
<tr>
<td>Tri = 3</td>
<td>Octa = 8</td>
</tr>
<tr>
<td>Tetra = 4</td>
<td>Nona = 9</td>
</tr>
<tr>
<td>Penta = 5</td>
<td>Deca = 10</td>
</tr>
</tbody>
</table>

Indicate the name of the covalent compound.
1. CO   
   Mono Carbon monoxide → carbon monoxide
2. CO₂  
   Carbon dioxide
3. SO₂  
   Sulfur dioxide
4. SO₃  
   Sulfur trioxide
5. N₂O  
   Di-nitrogen monoxide
6. NO   
   Nitrogen monoxide
7. N₂O₃ 
   Di-nitrogen trioxide
8. NO₂  
   Nitrogen dioxide
9. N₂O₄ 
   Di-nitrogen tetroxide
10. N₂O₅
    di-Nitrogen pentoxide

Analytical questions pertaining to covalent molecules.
1. Fructose is analyzed showing a ratio of C:H:O as 1:2:1, but the actual formula appears to be C₆H₁₂O₆.
   a. What is the empirical formula? 
      C₆H₁₂O₆  
      C₆H₁₂O₆
   b. The molecular formula?

2. Which of the problems (1-10) is the empirical formula not the same as the empirical?

3. Why are ionic compounds always empirical where covalent can be both?
   Just a stack of +/−, so simplest ratio works well. Covalent uses a molecule. So, we like to tell exact # in the molecule.