1. Aufbau Principle

2. Pauli Exclusion Principle

3. Hund's Rule:

What is the ground state configuration of oxygen?
Octet Rule:

Energy required to remove e⁻:

Types of Bonds:

\[ F: F \quad H-F \quad Na^+ Cl^- \]

Molecular Orbital Theory

- σ bond
- π bond

Would He + He form a bond?

Which is more stable σ or π?
C

H\_3C\_H

\text{Methane}

\text{Shape: Bend Angle}

\text{Ethene}

\text{Which is easier to break } \sigma \text{ or } \Pi \text{? Why? Can ethene rotate?}

\text{Ethyne}
Do the \( \text{sp}^2 \) hybridized C's & indicated atoms lie in the same plane?

Which is more polar?

\( \text{C} - \text{H} \quad \text{N} - \text{H} \)
<table>
<thead>
<tr>
<th>Name</th>
<th>Hybridization</th>
<th>Bond Angle</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH₄</td>
<td>Methane</td>
<td>sp³</td>
<td>109.5°</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>tetrahedral shape</td>
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<tr>
<td>CH₂=CH₂</td>
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<tr>
<td>CH≡CH</td>
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<tr>
<td>+CH₃</td>
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<tr>
<td>*CH₃</td>
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<tr>
<td>CH₃CH₂</td>
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<tr>
<td>H₂O</td>
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<td>NH₃</td>
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- Electronegativity / Hydrogen halides.
  - Shorter bonds are __ bonds because:

  Rank bond length, circle the strongest bond.
  - H-Br  
  - H-F  
  - H-I  
  - H-Cl

- Acid & Bases
  - Brønsted-Lowry Acid:
    - Strong Acid
    - Weak Acid:
  - Brønsted-Lowry Base:

  proton-transfer/Acid-Base Rxns:
  \[ HA + H₂O ⇌ H₃O⁺ + A⁻ \]

  Equilibrium Constant: