For the following compounds, which are polar, non-polar, and ionic? What makes a bond polar, non-polar, or ionic?

- $H_2O$
- $NaCl$
- $C_2H_6$
- $CH_2Cl_2$
- $C_6H_6$

**Given a 2nd-row element, what is the electronic config?**

Example:

```
Energy

\[
\begin{array}{c|c|c|c|c}
2p & p_x & p_y & p_z \\
2s & \uparrow & \downarrow & \uparrow \\
1s & 1s^2 & 2s^2 & 2p^2
\end{array}
\]
```

Valence electrons – what we care about in reactions

Core electrons

Work as a group:

```
Number of sp^3 hybridized carbon atoms: _____
Number of sp^2 hybridized carbon atoms: _____
Number of sp hybridized carbon atoms: _____
Number of hydrogen atoms: _____
```

1. Identify the molecular geometry and the bond angles of the atoms below.

Highlight any pi bonds. Label the hybridization of each carbon atom.
What is the bond angle for sp³, sp², and sp hybridized molecules?

<table>
<thead>
<tr>
<th>Example</th>
<th># of bonded atoms and lone pairs</th>
<th>geometry</th>
<th>bond angle</th>
<th>hybridization</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>4</td>
<td>tetrahedral</td>
<td>109.5°</td>
<td>sp³</td>
</tr>
<tr>
<td>H(\equiv)H</td>
<td>3</td>
<td>trigonal planar</td>
<td>120°</td>
<td>sp²</td>
</tr>
<tr>
<td>H(\equiv)C(\equiv)H</td>
<td>2</td>
<td>linear</td>
<td>180°</td>
<td>sp</td>
</tr>
</tbody>
</table>