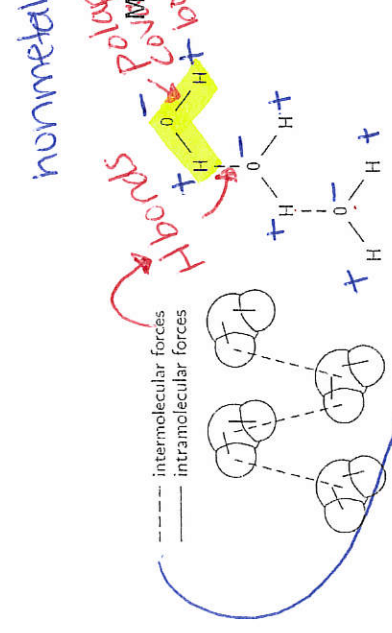
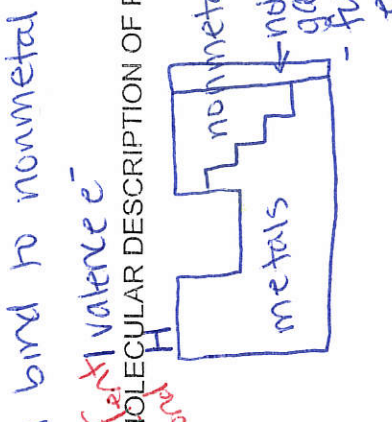
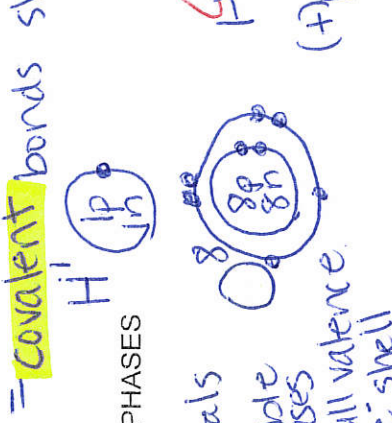
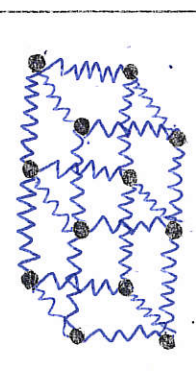

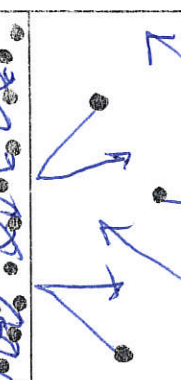



nonmetal bond to nonmetal = **covalent** bonds share  $e^-$



Phase	Describe Forces Between Molecules	Describe Motion of Molecules	Describe Spacing and Arrangement of Molecules	Diagram
Solid	<ul style="list-style-type: none"> <li>strong enough to hold molecules in place</li> <li>"Permanent Springs"</li> </ul>	<ul style="list-style-type: none"> <li>vibrating slowly in place</li> <li>low energy</li> </ul>	<ul style="list-style-type: none"> <li>close, compact uniform spacing</li> <li>denser (than liq) except <math>H_2O</math></li> </ul>	<ul style="list-style-type: none"> <li>molecule</li> <li>MMMF</li> </ul> 
Liquid	<ul style="list-style-type: none"> <li>break/reform IMFs</li> <li>hold together</li> <li>Temporary Springs</li> </ul>	<ul style="list-style-type: none"> <li>flow around each other</li> <li>more vigorous vibrations than (s)</li> </ul>	<ul style="list-style-type: none"> <li>less dense than solid except for <math>H_2O</math>(s)</li> </ul>	<ul style="list-style-type: none"> <li>temporary IMFs</li> </ul> 
Gas	<ul style="list-style-type: none"> <li>IMFs are broken</li> </ul>	<ul style="list-style-type: none"> <li>vibrate vigorously &amp; independently of each other</li> <li>exert pressure</li> </ul>	<ul style="list-style-type: none"> <li>very far apart but depends on container</li> <li>KE = causes molecules to move out</li> </ul>	 <p><math>H_2O(g)</math> 1500X less dense</p>
Plasma	<ul style="list-style-type: none"> <li>IMFs are broken</li> </ul>	<ul style="list-style-type: none"> <li>move so fast that <math>e^-</math> (ve) are stripped away</li> </ul>	<ul style="list-style-type: none"> <li>far apart</li> </ul>	

MOLECULAR DESCRIPTION OF PHASES

metals vs nonmetals vs noble gases vs full valence  $e^-$  shell

intermolecular forces vs intramolecular forces

Polof  $e^-$  valence vs Covalent bond

Diagram of  $H_2O$  showing hydrogen bonds between water molecules.

Phase Changes and Temperature

