When it comes to Chemical Bonding, I can…	
1	I can state the 3 types of chemical bonds:
2	I can state the number of valence electrons that an atom attains to be most stable.
3	I can state the 2 simple types of compounds
4	I can define ionic bond, covalent bond, and metallic bond in terms of the types of elements from which they are formed. (metals, nonmetals)
5	I can define ionic and covalent bonds based on what happens to the valence electrons.
6	In terms of valence electrons, I can explain why the bonding in CH_4 is similar to bonding in H_2O.
7	In terms of valence electrons, I can explain why the bonding in HCl is different than bonding in NaCl.
8	I can draw a Lewis dot diagram to represent ionic compounds like lithium bromide and calcium chloride
9	I can draw a Lewis dot for covalent compounds & elements like H_2O, CH_4, CO_2 and I_2.
10	I can draw a Lewis dot diagram to represent atoms or ions, like H, B, Mg, Al, Cu^{+2}, Mn^{+4}, or Bi (etc.)
11	I can state the number of electrons that are shared in single, double and triple covalent bonds. I can also state the number of pairs of electrons that are shared. I also know the difference between these concepts.

I can fill in this chart	Number of electrons shared	Number of pairs of electrons shared	Name and formula of 2 different example molecules that have this type of bond
Single covalent bond			
Double covalent bond			
Triple covalent bond			

12	I can explain why the Lewis dot diagrams of ionic compounds have brackets and why the Lewis dot diagrams of molecular compounds do not.
14	I can state the type of bonding that occurs in the polyatomic ions (Reference Table E) and explain why they have that type of bonding
15	Given a compound's chemical formula, I can determine all types of bonding in the compound. I could use NaCl, Hg, CO_2, and Na_3PO_4 in a full explanation
16	I can state the important statement about bonding + energy which starts: When bonds form…
17	I can state the reverse of that important bonding statement as well.
18	Given the balanced equation: $N + N \rightarrow N_2$ I can tell you that the statement that describes the process best is… A bond is… A. formed as energy is absorbed. B. formed as energy is released. C. broken as energy is absorbed. D. broken as energy is released.
19	I can explain the difference between a polar covalent bond and a nonpolar covalent bond in terms of the atoms involved. Polar covalent bonds are formed when nonmetals atoms with different _?_ share electrons unevenly. Nonpolar covalent bonds form when… _?_
20	I can explain how to determine the degree of polarity of a covalent bond. The degree of polarity of a covalent bond is determined by the _?_ between the elements
21	I can explain why one covalent bond is more, or less polar than another covalent bond, based on their electronegativity difference. I could also explain in terms of electronegativity difference, why the bond between C + O in a CO_2 molecule is less polar than the bond between H + O in H_2O.
22	I can define symmetrical molecules and asymmetrical molecules. I can also state in terms of having radial symmetry or not what can be said about a molecule's polarity
23	I can draw molecules like CO_2, H_2O and CH_4, and C_3H_8 and determine if they have radial symmetry
24	I can tell you why a molecule of CH_4 nonpolar even though C-H bonds in it are polar, it's because the… A. shape of the CH_4 molecule is symmetrical. B. shape of the CH_4 molecule is asymmetrical. C. CH_4 molecule has an excess of electrons. D. CH_4 molecule has a deficiency of electrons.
25	I can explain, in terms of charge distribution, why a molecule of water (H_2O) is polar
26	I can determine if a molecular is polar or nonpolar. Examples I'd use are: H_2O, CO_2, CH_4, and F_2

27	I can explain and apply the expression “like dissolves like” and give an example
28	I can explain, in terms of molecular polarity, why ammonia is more soluble than methane in water
29	I can define intramolecular forces and intermolecular forces and give examples of each
30	I can list the 4 intramolecular forces from STRONGEST to WEAKEST
31	I can state the relationship between molecular polarity and the strength of intermolecular forces (IMF). As molecular polarity of the molecule _?_ the strength of the intermolecular forces __
32	Given the physical state of some substances, I can compare the relative strength of the IMF. I can use F_2 and Br_2 at STP to explain this

33	Given the boiling points of some substances, I can compare the relative strength of the IMF. At STP, CF_4 boils at -127.8°C and NH_3 boils at -33.3°C. The molecules with stronger IMF are…?
34	I can explain “hydrogen bonding”. It’s in “quotations” because it’s not really bonding the way ionic or covalent is bonding. Explain why water has hydrogen bonding but carbon dioxide does not.
35	I can define what is meant by normal boiling point, vapor pressure, volatile, and nonvolatile
36	Of the four liquids on table H, I can state which has the strongest intermolecular bonding, and which has the weakest IMF.
37	I can determine the vapor pressure of ethanol, ethanoic acid, propane, or water at a given temperature. For example, I could tell you the vapor pressure of ethanol at 53°C?
38	I can state the relationship between the strength of IMF and vapor pressure. As the strength of the IMF _?_vapor pressure will _?_.
39	I can state the relationship between the strength of IMF and vapor pressure. As the strength of IMF _?_ vapor pressure will _?_
40	I can explain the how adding solute to pure water affects the freezing point of the water

<table>
<tr><td>41</td><td>I can explain how adding solute to pure water affects the boiling point of the water</td></tr>
<tr><td>42</td><td>I can state 5 physical properties of ionic substances.</td></tr>
<tr><td>43</td><td>I can identify a substance as “ionic” based on its properties. For example: A solid substance was tested in the laboratory. The results are: it dissolves in water, it is an electrolyte, and it has a high melting point. Based on this, the solid substance could be
A. Hg B. AuCl C. CH_4 D. $C_{12}H_{22}O_{11}$</td></tr>
<tr><td>44</td><td>Based on bond type, which compound here has the highest melting point?
A. CH_4 B. $C_{12}H_{22}O_{11}$ C. NaCl D. C_5H_{12}</td></tr>
<tr><td>45</td><td>I can state 5 physical properties of molecular substances.</td></tr>
<tr><td>46</td><td>I can identify a substance as “molecular” based on its properties. For example: When a chemist performs the same tests on 2 homogeneous white crystal solids the results are in her data table.

<table><tr><td></td><td>Solid A</td><td>Solid B</td></tr><tr><td>Melting point</td><td>High, 801°C</td><td>Low, decomposes at 186°C</td></tr><tr><td>Solubility in water (g/100.0g water at 0°C)</td><td>35.7</td><td>3.2</td></tr><tr><td>Electrical conductivity in aqueous solution</td><td>Good conductor</td><td>Non-conductor</td></tr></table>
The results suggest that
A. both solids contain only ionic bonds
B. both solids contain only covalent bonds
C. Solid A contains only covalent bonds; solid B contains only ionic bonds
D. Solid A contains only ionic bonds, and solid B contains only covalent bonds.</td></tr>
<tr><td>47</td><td>Which terms describe a substance that has a low melting point and poor electrical conductivity?
A. covalent and metallic B. covalent and molecular
C. ionic and molecular D. ionic and metallic</td></tr>
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