

When it comes to Chemical Bonding, I can...

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| 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 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 or nonmetals or both) |
| 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 like bonding in H ₂ O. |
| 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 ₂ O, 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 |
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| Single covalent bond | | | |
| Double covalent bond | | | |
| Triple covalent bond | | | |

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| 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 ₃ PO 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 the best is... A. A bond is formed as energy is absorbed. B. A bond is formed as energy is released. C. A bond is broken as energy is absorbed. D. A bond is 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 <u> ? </u> share electrons unevenly. Nonpolar covalent bonds form when... <u> ? </u> |
| 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 <u> ? </u> 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 ₂ O. |
| 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 ₂ O and CH ₄ , and C ₃ H 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 H ₂ O is polar |
| 26 | I can determine if a molecular is polar or nonpolar. Examples I'd use are: H ₂ O, CO ₂ , CH ₄ , and F ₂ |

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| 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 3 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 <u> ? </u> the strength of the intermolecular forces <u> </u> |
| 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 |

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| 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 |
| 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, 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 <u> ? </u> vapor pressure will <u> ? </u> . |
| 39 | I can state the relationship between the strength of IMF and vapor pressure. As the strength of IMF <u> ? </u> vapor pressure will <u> ? </u> |
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