

## CHM 130: Chapter 13 Blackboard Homework

- Check all of the examples below that are properties of liquids:
  - Definite shape and fixed volume
  - Indefinite shape but a fixed volume
  - Flow readily
  - Cannot expand or compress
  - If miscible, can mix uniformly to form a homogeneous mixture
  - Lacks the energy to mix, so cannot mix by diffusion
  - Can be crystalline or noncrystalline
- Check all of the examples below that are properties of solids:
  - Definite shape and fixed volume
  - Indefinite shape but a fixed volume
  - Flow readily
  - Cannot expand or compress
  - If miscible, can mix uniformly to form a homogeneous mixture
  - Lacks the energy to mix, so cannot mix by diffusion
  - Can be crystalline or noncrystalline
- Intermolecular forces or bonds exist between \_\_\_\_\_.
  - two atoms in a polar molecule
  - two atoms in a nonpolar molecule
  - two different ions in an ionic compound
  - two different molecules
  - two different metals
- Check all of the following that are types of intermolecular forces:
  - Ionic bond
  - Polar Covalent bond
  - Nonpolar Covalent bond
  - Hydrogen bond
  - London Dispersion force
  - Dipole force
- The attraction between nonpolar molecules in liquids or solids that is a temporary dipole is known as a(n) \_\_\_\_\_.
  - ionic bond
  - covalent bond
  - London dispersion force
  - dipole force
  - hydrogen bond
- The attraction between polar molecules in liquids or solids that do not contain a H-F, H-O, or H-N bond is known as a(n) \_\_\_\_\_.
  - ionic bond
  - covalent bond
  - London dispersion force
  - dipole force
  - hydrogen bond
- The strongest attraction between polar molecules in liquids or solids that contain a H-F, H-O, or H-N bond is known as a(n) \_\_\_\_\_.
  - ionic bond
  - covalent bond
  - London dispersion force
  - dipole force
  - hydrogen bond
- Check all of the examples below that are polar:
  - NH<sub>3</sub>
  - CCl<sub>4</sub>
  - Br<sub>2</sub>
  - CH<sub>3</sub>Cl
  - H<sub>2</sub>O
  - HF
  - CH<sub>4</sub>
- Check all of the statements below that are correct:
  - Hydrogen bonds are stronger than ionic and covalent bonds.



19. The bond holding two HBr molecules together is \_\_\_\_\_.
- a) an ionic bond
  - b) a polar covalent bond
  - c) a nonpolar covalent bond
  - d) a London dispersion force
  - e) a dipole force
  - f) a hydrogen bond
20. The bond holding the O-H atoms together in a water molecule is \_\_\_\_\_.
- a) an ionic bond
  - b) a polar covalent bond
  - c) a nonpolar covalent bond
  - d) a London dispersion force
  - e) a dipole force
  - f) a hydrogen bond
21. Which of the examples are molecular solids? \_\_\_\_\_
- a) nickel, Ni (s)
  - b) magnesium oxide, MgO (s)
  - c) iodine, I<sub>2</sub> (s)
  - d) copper wire, Cu (s)
  - e) diamond, a form of carbon
  - f) ice, H<sub>2</sub>O (s)
  - g) table salt, NaCl (s)
22. Which of the examples are ionic solids? \_\_\_\_\_
- a) nickel, Ni (s)
  - b) magnesium oxide, MgO (s)
  - c) iodine, I<sub>2</sub> (s)
  - d) copper wire, Cu (s)
  - e) diamond, a form of carbon
  - f) ice, H<sub>2</sub>O (s)
  - g) table salt, NaCl (s)
23. Which of the examples are metallic solids? \_\_\_\_\_
- a) nickel, Ni (s)
  - b) magnesium oxide, MgO (s)
  - c) iodine, I<sub>2</sub> (s)
  - d) copper wire, Cu (s)
  - e) diamond, a form of carbon
  - f) ice, H<sub>2</sub>O (s)
  - g) table salt, NaCl (s)
24. The Electron Dot Formula for water shows: (Check all that apply.)
- a) 8 valence electrons
  - b) 1 double bond and 1 single bond
  - c) 2 bonding and 2 nonbonding electron pairs
  - d) single bonds from the oxygen to the hydrogen atoms
  - e) a double bond and 3 nonbonding electron pairs
25. Check all of the statements regarding water below that are true:
- a) Water has a linear molecular shape with a 180° bond angle.
  - b) Water has a bent molecular shape with a <109.5° bond angle.
  - c) The H-O bond in water is a nonpolar covalent bond.
  - d) The H-O bond in water is a polar covalent bond with the  $\delta^-$  on the O and the  $\delta^+$  on the H.
  - e) Water is a polar molecule.
  - f) Water molecules experience hydrogen bonds.
  - g) The density of ice is higher than the density of water in the liquid state.