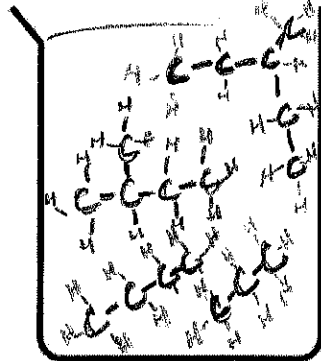


Chemistry Concepts Review

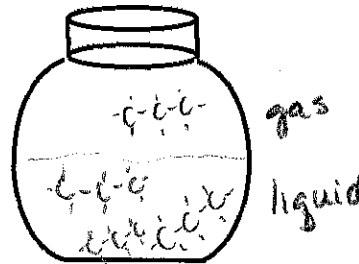
Name _____

1. Crude oil is a mixture of all different hydrocarbon chains. In the beaker below draw a representative particulate drawing of what you think would correctly show what crude oil looks like.



different lengths of hydrocarbon chains

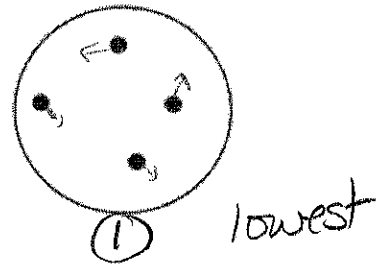
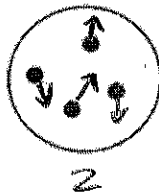
2. Propane, a fuel used for gas grills, commonly referred to as liquid propane. In the picture below, show a pictorial version of this tank (half full). Include all aspects of propane (C-C-C) in the tank.



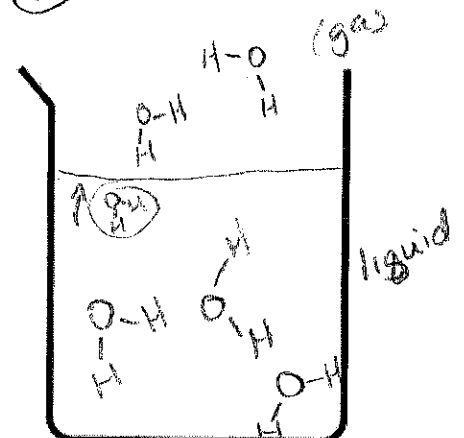
3. The three samples of identical gas molecules below all have the ~~same internal pressure~~. Rank the samples from lowest temperature to highest temperature, and add arrows of appropriate size to illustrate the average kinetic energy of the molecules in the samples.

$$\frac{P_1 V_1}{n_1 T_1} = \frac{P_2 V_2}{n_2 T_2}$$

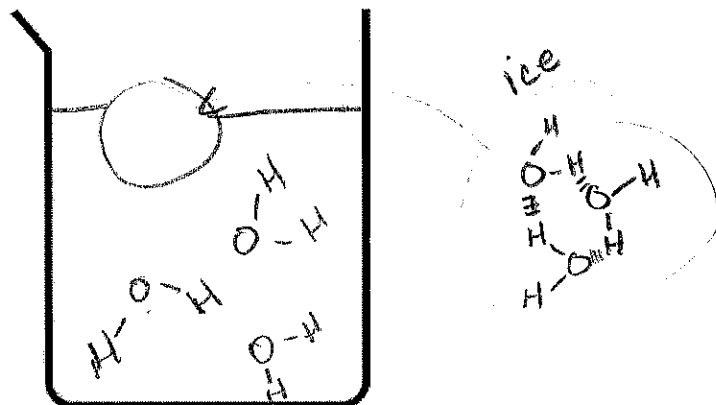
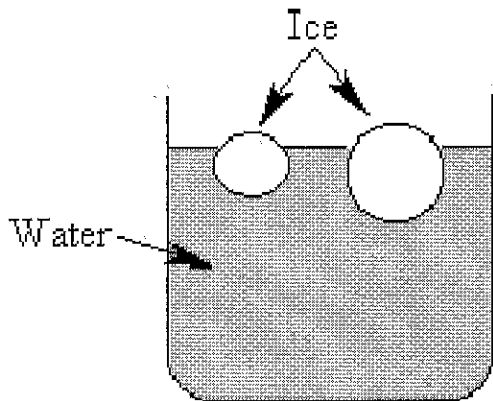
$n \propto T$ directly proportional
 $V \propto T$ indirectly proportional



4. Water is boiling draw a picture of the molecules in this process.



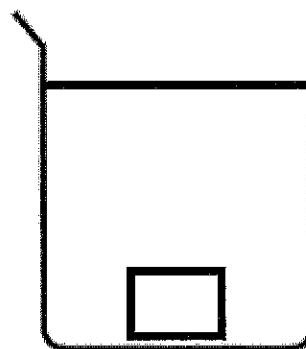
5. a. Ice is floating in this problem due to?
 b. In the beaker to the right draw a molecular view of the picture on the left.



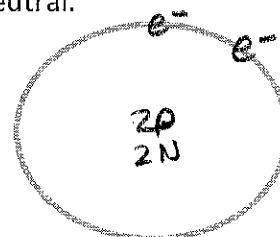
7. A person burns wooden pellets for heat in the winter. Answer the following questions:
 If a person burns 1 ton of wooden pellets:

- a. What are the products of the burning? $CO_2 + H_2O$
 b. The total mass of the products is greater, equal or less than 1 ton. (add O_2)
 Law of Conservation of mass
 Mass cannot be created or destroyed

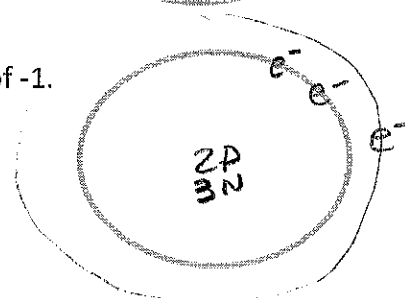
8. A hot block is added to room temperature water
 (True/false) Block lost same quantity water gained.
 (True/false) Block and water will end at same temperature.
 (True/false) The water will end up hotter than the block.



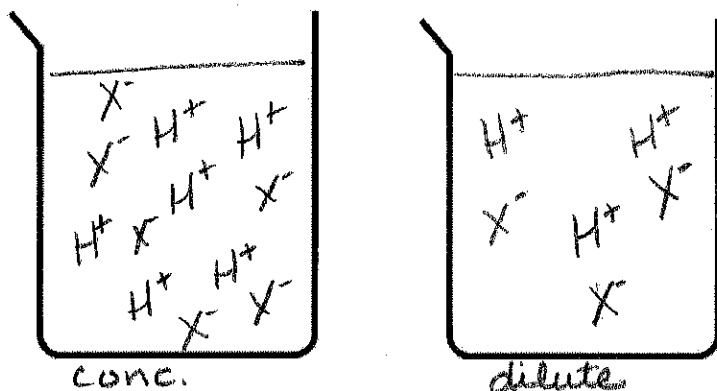
9. Draw an atom of helium with a mass number 4 and a charge of neutral.



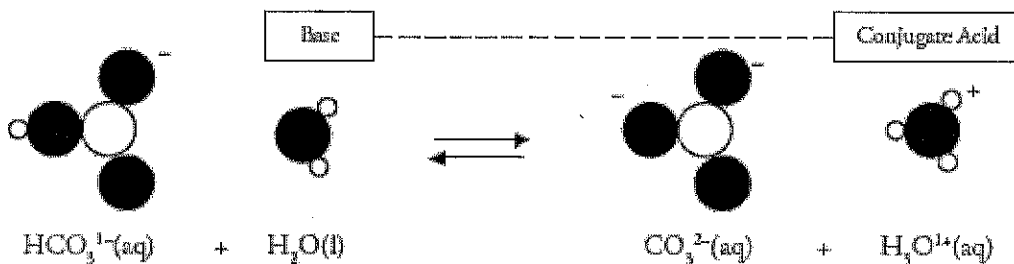
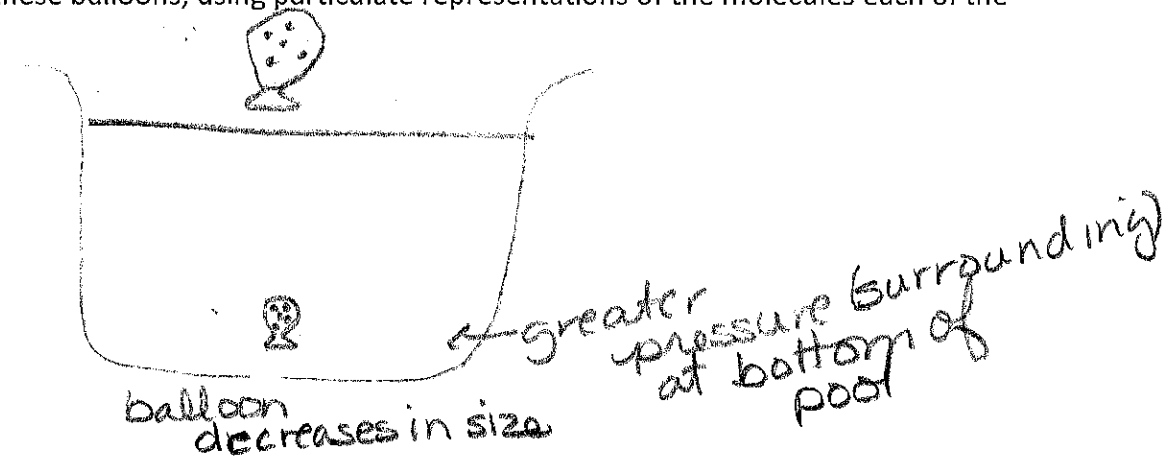
10. Draw a helium atom with a mass number of 5 and a charge of -1.



11. The two beakers below contain acidic solutions. 1st one is concentrated and 2nd is a dilute acid. Draw a particulate view of each.



12. A balloon contains 1 mole of helium gas; This balloon is pulled to the bottom of a pool. Draw both of these balloons, using particulate representations of the molecules each of the balloons.



13. All acid-base reactions have two conjugate acid-base pairs. One conjugate acid-base pair in the reaction in Model 3 is H₃O⁺/H₂O. List the other acid-base pair in the reaction.

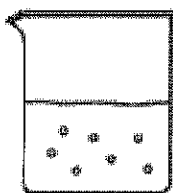


14. Why is HCO₃⁻ considered the "acid" part of the pair in the reaction in Model 3?
It's the H⁺ (proton) donor

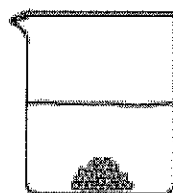
15. Why is CO₃²⁻ considered the "base" part of the pair in the reaction in Model 3?
It is the (proton) H⁺ acceptor in the reverse reaction

16.

1. Which illustration below represents
 - a. solute particles in a solid state in water?
 - b. solute particles in an aqueous state?



b



a

17. Predict what would happen to the mass of solid solute sitting on the bottom of the beaker in when the following changes occur.

- a. More water is added to the beaker.

The mass of the solid would decrease because more solute would dissolve.

- b. The beaker is heated (assume no evaporation occurs).

The mass of the solid would decrease because more solute would dissolve as the temperature increases.

- c. The beaker is allowed to sit uncovered for two days and some water evaporates.

The mass of the solid would increase because less solvent is available to dissolve it.