Name_____ H Chem, Period ____

Physical and Chemical Properties and Changes

1. Describe the three common states of matter. Include particle placement and motion, and the properties of each.

    a. Solid: Solids have a fixed shape and fixed volume. Atoms are close together and vibrating with little range of motion and are thus, not compressible. Solids are crystalline or non-crystalline. Most solids are denser than their liquid counterpart (exception water). They do not mix by diffusion or osmosis.

    b. Liquid: Liquids have a fixed volume but a variable shape. Atoms are close together, but they can vibrate as well as roll over each other and flow. Thus, they are not compressible (only slightly compressible). Different liquids have different viscosities and liquids tend to be denser than gases. Soluble liquids will mix uniformly together.

    c. Gas: Gases have a variable shape and volume. The atoms are far apart and can vibrate, as well as move rotationally and translationally. Thus, can both expand and compress. Gases have lower densities and will uniformly with one another. They exert pressure by colliding with the walls of the container.

2. Name 4 physical properties and give an example of each. Examples used could be color, odor, temperature, conductivity, melting point, solubility.

3. List 4 observations that indicate a chemical reaction occurred. Burning or rusting (oxidation); release of gas bubbles without heating or boiling; formation of a precipitate; release of heat or light, change in color or odor.

4. As moisture forms on a glass of ice water, describe the phase change that is occurring. Explain what is happening on the molecular level between molecules and include temperature or heat exchange in your explanation. CONDENSATION = As moisture forms, the water molecules are beginning to lose energy or heat to the environment and thus will move slower. As they move slower, they will get closer together. This causes the molecules to go from being a gas to becoming a liquid or condensing.

Write a T for true and an F for false.

_____1. Color change is evidence that a chemical change may have occurred. T

_____2. Fizzing or foaming is only evidence that a physical change may have occurred. F

_____3. Production of heat or light is evidence that a chemical change may have occurred. T

_____4. Chemical changes cannot be reversed by physical changes. T

Write a C for chemical change, and a P for physical change.

_____5. An apple is cut in half. P

_____6. Dissolving sugar and water P

_____7. Cement drying. C

_____8. Baking soda and vinegar are mixed and forms a gas C

_____9. A piece of metal is bent in half. P

_____10. Methanol is burned and leaves a residue C

_____11. An aspirin is crushed into fine powder P

_____12. Copper turns green when exposed to the environment C

_____13. Two clear liquids are mixed and a yellow precipitate forms C

_____14. Diamonds are used to scratch glass P

_____15. A tree burns to form ashes C

_____16. A piece of paper is crumpled up P

_____17. Water freezes to form ice P