Unit 1 Lesson 4 Pure Substances and Mixtures Notes

1. How can matter be classified?
   1. Matter is made up of basic “ingredients” known as atoms.
   2. An **atom** is the smallest unit of an element that maintains the properties of that element.
   3. Substances are classified as *elements, compounds*, and *mixtures*.
   4. An **element** is made of only one kind of atom.
   5. A **compound** is made up of different kinds of atoms that are chemically combined.
   6. A **mixture** contains a variety of elements and compounds that are not chemically combined
2. What are pure substances?
   1. A **pure substance** is a substance with definite physical and chemical properties.
   2. Pure substances are made up of just one type of particle.
   3. Elements and compounds are pure substances.
   4. Physical changes such as melting, freezing, cutting, or smashing do not change the identity of pure substances.
   5. When a pure substance undergoes a chemical change, it is no longer that same substance.
3. How can elements be classified?
   1. Elements are classified as metals, nonmetals, or metalloids.
   2. Classifying elements helps scientists predict the properties of elements.
   3. The periodic table is a tool used to classify and identify elements that have similar properties.
4. How can compounds be classified?
   1. Compounds can be classified as acidic, basic, or neutral by measuring *pH*.
   2. Pure water has a pH of 7. Acids have a pH below 7. Bases have a pH above 7.
   3. Blue litmus paper turns red in the presence of an acid.
   4. Red litmus paper turns blue in the presence of a base.
   5. Compounds can be organic or inorganic.
   6. *Organic* compounds are those that contain carbon and hydrogen.
   7. Organic compounds made by living things are called biochemicals.
   8. *Carbohydrates, lipids, proteins,* and *nucleic acids* are biochemical compounds.
5. What are mixtures?
   1. A mixture is a combination of two or more substances that are combined physically but not chemically.
   2. Mixtures are not pure substances and do not have definite properties.
   3. Substances within a mixture keep their identities and individual properties.
   4. Mixtures can be separated by physical changes, although some mixtures are difficult to separate.
   5. Magnets, centrifuges, filters, and other materials can be used to separate mixtures.
6. How can mixtures be classified?
   1. A **heterogeneous** mixture is one that does not have a uniform composition.
   2. A **homogeneous** mixture has the same composition throughout.
   3. A *suspension* is a heterogeneous mixture.
   4. Particles in a suspension are spread throughout a liquid or gas, but are too large to stay mixed unless shaken or stirred.
   5. Particles settle in suspensions.
   6. A *solution* is a homogeneous mixture in which one substance is dissolved in another substance.
   7. *Colloids* have particles that are unevenly spread throughout the mixture.
   8. Unlike a suspension, particles in colloids are too small to settle out of the mixture.