Chapter 15: Chemistry Lab

Name_____Period__

Classification of Matter: Elements, Compounds, or Mixtures

Objective Visualize the difference in composition of elements, compounds, and mixtures

Background The subscript in a chemical formula indicates how many atoms are present. For example, H_2O contains two atoms of hydrogen and one atom of oxygen.

Materials Gum drops containing at least 5 different colors, 9 toothpicks, 7 clear zip lock bags, a labeling pen; 1 set of instructions.

Color 1 _____ = 12, represents Oxygen

Color 2 _____ = 12, represents Hydrogen

Color 3_____ = 2, represents Iron

Color 4 _____= 4, represents Sodium

Color 5 _____ = 4, represents Chlorine

OK to use different colors.

Safety Students should not eat the candy during the activity.
Students should not place plastic bags over their faces.

Procedure

1. Break the 9 toothpicks in half, this will represent 18 bonds. All will be used.
2. Use ***Color 1*** candy and toothpicks to make 4 molecules of oxygen (O_2) and place in bag labeled *O_2, Element*. Make your observations.
3. Use ***Color 2*** candy and toothpicks to make 2 molecules of hydrogen (H_2) and place in bag labeled *H_2, Element*. Make your observations.
4. Use ***Color 3*** candy to make 2 atoms of iron (Fe) and place in bag labeled *Fe, Element.*
5. Use ***Color 4*** and ***Color 5*** candy to make 4 molecules of salt (NaCl) and place in bag labeled *Salt (NaCl), Compound*. Make your observations.
6. Use ***Color 1*** and ***Color 2*** candy to make 4 molecules of water (H_2O) and place in bag labeled *Water (H_2O), Compound*. Make your observations.
7. Label 1 bag *Salt Water, Mixture*. **Take** 2 molecules of NaCl and 2 molecules of H_2O, and place in bag. Make your observations.
8. Label 1 bag *Dissolved Oxygen, Mixture*. **Take** 2 molecules of O_2 and 2 molecules of H_2O, and place in bag. Make your observations.

Observations: Draw, using colored pencils or markers, the contents of each bag. Be sure to label each drawing accordingly.

Analysis Questions

1. Look at the three bags labeled ***Element*** and answer the following questions.
   a. What do the three bags have in common? *(Observe the contents of the bag only. Hint: look at the color of the candy in the bag.)*

   b. How does each bag represent elements?

2. Look at the two bags labeled *Compound* and answer the following questions.
   a. What two things do they have in common? *(Observe the contents of the bag only. Hint: look at the color of the candy in the bag and the placement of the toothpicks.)*

   b. How does each bag represent a compound?

3. Look at the two bags labeled *Mixtures* and answer the following questions.
   a. What do they have in common? *(Observe the contents of the bag only. Hint: again look at the colors of the candy in the bag and the placement of the toothpicks.)*

   b. How does each bag represent a mixture?

4. In your own words, what is the difference between elements, compounds, and mixtures? Use 2-4 complete sentences.

5. Explain the analogy: An element is to a compound as a brick is to a house.

Bonus: Complete your own analogy: Elements and compounds are to mixtures as a

_____ and _____ are to _____.