

Atoms, Molecules and Ions

Name - _____

1.) Classify each of the following as an atom, molecule or ion.

S^{2-} _____

O_2 _____

Sb _____

O _____

Al^{3+} _____

NH_3 _____

2.) A clear glass bottle contains white sand, some nails, salt water with some dye dissolved in it and a layer of gasoline on top. How many phases are present in this system excluding the bottle and lid?

3.) Classify each of the following as heterogeneous or homogeneous.

Diamond _____

tree _____

egg _____

4.) If you had 10 g of gold, should you refer to it as an atom or an element?

5.) In what way are a true solution and a compound similar? In what ways do they differ?

6.) Which of the following are the possible classifications (element, compound, true solution, or mechanical mixture) for the items listed below? There may be more than one answer for each example.

a.) a clear liquid which can be boiled away to leave a white solid. _____

b.) a collection of solid particles, some of which are white and some are red. _____

c.) a solid which melts at $170^{\circ}C$. _____

d.) a gas. _____

e.) a liquid. _____

f.) a liquid which boils away completely at 136°C. When the liquid is strongly heated in a closed container, a yellow gas and solid are produced. _____

7.) Which of sugar, dirt and air are pure substances and which are mixtures?

8.) How many phases are present in a regular pencil?

9.) Classify each of the following as a mixture or a compound.

a.) alcohol ($\text{CH}_3\text{CH}_2\text{OH}$) _____

b.) soda pop _____

c.) CH_3OH in H_2O _____

d.) vinegar _____

e.) mini-wheats _____

f.) pizza _____

g.) baking soda _____

h.) peanut butter cookies _____

i.) popcorn with salt and butter _____

j.) milk _____