

ELEMENTS, COMPOUNDS & MIXTURES

Name: _____ Partner: _____

Purpose: To learn to distinguish between the concepts of element, compound and mixture.**Introduction:** In your own words define the following as best as you know:**element:** _____**compound:** _____**mixture:** _____

Elements are usually easy to identify, since they are comprised of just one type of atom, but many students have trouble with the distinction between compounds and mixtures, since both involve combinations of different elements. What, for example, is the difference between the compound aluminum sulfide and a simple mixture of aluminum and sulfur? There really are two answers for this question: 1) In the compound aluminum sulfide, the atoms are bonded to one another (either to form molecules or crystal structures), whereas in a mixture of aluminum and sulfur, the atoms are simply mixed together, but not specifically bonded. 2) In the compound aluminum sulfide, the atoms are present in a specific ratio: in this case 2:3 -- that is, there are two aluminum atoms for every three sulfur atoms -- hence aluminum sulfides formula is Al_2S_3 . This is true no matter how the aluminum sulfide was made or where it came from... this is what is meant by a "fixed proportion." In a mixture, the aluminum and sulfur could be present in any proportions: 1:1, 1:2, 58:17... in whatever ratio the person who made the mixture decided to combine them.

Procedure:

1. Obtain ten bags: **A** through **J**. These bags contain beads which represent atoms: different colors represent different elements. Examine each bag carefully and discuss with your partner whether you think the bag contains an element, a compound or a mixture. Once you have reached agreement, sketch the content of the bag in the appropriate box below, indicate beneath that what it is: "element," "compound" or "mixture", and then give a brief explanation for your choice.

A sketch:	B	C	D	E
el. cmp or mx?				
explanation				
F	G	H	I	J