

Classification of Matter

1. In the left hand column, how can you tell what is a mixture and what is a compound?
2. In the left hand column, how can you tell the difference between a compound and a heterogeneous mixture?

Material	Pure Substance or Mixture	Element, Compound, Homogeneous, Heterogeneous
concrete		
sugar + pure water (C ₁₂ H ₂₂ O ₁₁ + H ₂ O)		
iron filings (Fe)		
limestone (CaCO ₃)		
orange juice (w/pulp)		
Pacific Ocean		
helium inside a balloon		
aluminum (Al)		
magnesium (Mg)		
acetylene (C ₂ H ₂)		
tap water in a glass		
soil		
pure water (H ₂ O)		
chromium (Cr)		
Chex mix		
salt + pure water (NaCl + H ₂ O)		
benzene (C ₆ H ₆)		
muddy water		
brass (Cu mixed with Zn)		
baking soda (NaHCO ₃)		

1. Compare a *mixture* and a *compound*. How are they alike?
2. Contrast a *mixture* and a *compound*. How are they different?

Chemistry Worksheet: Matter #1

3. A mixture (*is/is not*) a chemical combining of substances.
4. In a compound the (*atoms/molecules*) are (*chemically/physically*) combined so that the elements that make up the compound (*retain/lose*) their identities and (*do/do not*) take on a new set of properties.
5. The smallest identifiable unit of a compound is a(n) _____, which is made up of _____ which are chemically bonded.
6. True or False: A mixture is always made up of a combination of elements.
7. In a mixture, the substances (*lose/retain*) their identities.
8. In a mixture the substances involved (*can/cannot*) be separated by a simple physical process.
9. In a compound the elements involved (*can/cannot*) be separated by a simple physical process because the elements are (*physically combined/chemically bonded*).
10. (*True or False*): An element can be broken down into a simpler substance.
11. The smallest identifiable unit of an element is a(n) _____.
12. How can you tell if a substance is an element?
13. From the following list of substances, circle the ones that are ELEMENTS. (*HINT: Periodic table?*)

silver	carbon	dioxide	wood	alcohol	chromium
water		hydrogen		carbon	nitrogen
oxygen		gold		sugar	
salt		air		sulfur	
magnesium		nickel		aluminum	

Think it through...

14. Explain how to separate the sugar and water in a solution of sugar and water.
15. How would you separate a mixture of alcohol and water?
16. How would you separate sand and water?