

MATTER

1. What is the physical state of each of these materials at room temperature?
 - a. Gold
 - b. Gasoline
 - c. Neon
 - d. olive oil
 - e. oxygen
 - f. mercury
2. What is the difference between homogeneous mixtures and heterogeneous mixtures?
3. Classify each of the following as homogeneous or heterogeneous mixtures.
 - a. Chocolate-chip ice cream
 - b. Green ink
 - c. Cake batter
 - d. Cooking oil
4. Classify each of the following as a physical or chemical change. For any chemical change, list at least one clue to support your answer.
 - a. A copper wire bent.
 - b. Charcoal burns in a grill.
 - c. Bread dough rises when yeast is added
 - d. Sugar dissolves in water
5. How could you distinguish an element from a compound?
6. Name the elements found in each of the following compounds.
 - a. Ammonia (NH_3)
 - b. Potassium oxide (K_2O)
 - c. Sucrose ($\text{C}_{12}\text{H}_{22}\text{O}_{11}$)
 - d. Calcium sulfide (CaS)

Solid Investigation

1. How does a chemical change affect the composition of matter?
2. Name four possible clues that a chemical change has taken place.
3. In a chemical reaction, how does the mass of the reactants compare with the mass of the products?

4. What is the main difference between physical changes and chemical changes?
5. Classify the following changes as physical or chemical changes.
 - a. Water boils
 - b. Salt dissolves in water
 - c. Milk turns sour
 - d. A metal rusts.
6. According to the law of conservation of mass, when is mass conserved?
7. What is the difference between homogeneous mixtures and heterogeneous mixtures?
8. Use the arrangement of particles in solids and gases to explain why solids are not as easy to compress as gases.

LIKES DISSOLVE LIKES

1. Explain why collaboration and communication are important in science.
2. Why should a hypothesis be developed before experiments take place?
3. Why is it important for scientists to publish a description of their procedures along with the results of their experiments?
4. Why would a firefighter or a reporter need to understand chemistry?
5. How can testing soil help to increase the productivity of farmland?
6. What is a pollutant?
7. Identify the statements that correctly describe good problem solvers.
 - a. Read a problem only once
 - b. Check their work
 - c. Look up missing facts
 - d. Look for relationships among the data

Spilled Chemicals

1. How did chemists begin the process of organizing elements?
2. What property did Mendeleev use to organize his periodic table?
3. How are the elements arranged in the modern periodic table?
4. Name the three broad classes of elements?
5. Identify each element as a metal, metalloid, or nonmetal.
 - a. Gold
 - b. Silicon
 - c. Sulfur
 - d. Barium
6. Compare the arrangements of individual particles in solids, liquids, and gases.
7. List three physical properties of copper.
8. Fingernail-polish remover (mostly acetone) is a liquid at room temperature. Would you describe acetone in the gaseous state as a vapor or a gas? Explain your answer
9. Explain why mass cannot be used as a property to identify a sample of matter.
10. Identify each of the following items as a mixture or compound. Classify the mixtures as homogeneous or heterogeneous.
 - a. Raw egg
 - b. Ice
 - c. Gasoline
 - d. blood