

## PHYSICAL VS. CHEMICAL PROPERTIES

Name \_\_\_\_\_

A physical property is observed with the senses and can be determined without destroying the object. For example, color, shape, mass, length and odor are all examples of physical properties.

A chemical property indicates how a substance reacts with something else. The original substance is fundamentally changed in observing a chemical property. For example, the ability of iron to rust is a chemical property. The iron has reacted with oxygen, and the original iron metal is changed. It now exists as iron oxide, a different substance.

Classify the following properties as either chemical or physical by putting a check in the appropriate column.

	Physical Property	Chemical Property
1. blue color		
2. density		
3. flammability		
4. solubility		
5. reacts with acid to form $H_2$		
6. supports combustion		
7. sour taste		
8. melting point		
9. reacts with water to form a gas		
10. reacts with a base to form water		
11. hardness		
12. boiling point		
13. can neutralize a base		
14. luster		
15. odor		

## PHYSICAL VS. CHEMICAL CHANGES

Name \_\_\_\_\_

In a physical change, the original substance still exists, it has only changed in form. In a chemical change, a new substance is produced. Energy changes always accompany chemical changes.

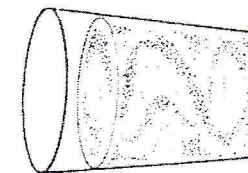
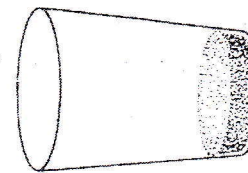
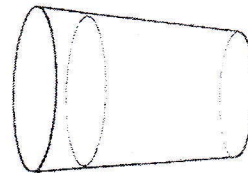
Classify the following as being a physical or chemical change.

- Sodium hydroxide dissolves in water. \_\_\_\_\_
- Hydrochloric acid reacts with potassium hydroxide to produce a salt, water and heat. \_\_\_\_\_
- A pellet of sodium is sliced in two. \_\_\_\_\_
- Water is heated and changed to steam. \_\_\_\_\_
- Potassium chlorate decomposes to potassium chloride and oxygen gas. \_\_\_\_\_
- Iron rusts. \_\_\_\_\_
- When placed in  $H_2O$ , a sodium pellet catches on fire as hydrogen gas is liberated and sodium hydroxide forms. \_\_\_\_\_
- Evaporation. \_\_\_\_\_
- Ice melting. \_\_\_\_\_
- Milk sours. \_\_\_\_\_
- Sugar dissolves in water. \_\_\_\_\_
- Wood rotting. \_\_\_\_\_
- Pancakes cooking on a griddle. \_\_\_\_\_
- Grass growing in a lawn. \_\_\_\_\_
- A fire is inflated with air. \_\_\_\_\_
- Food is digested in the stomach. \_\_\_\_\_
- Water is absorbed by a paper towel. \_\_\_\_\_

## Substances vs. Mixtures

A substance is matter for which a chemical formula can be written. Elements and compounds are substances. Mixtures can be in any proportion, and the parts are not chemically bonded. Classify the following as to whether it is a substance or a mixture by writing S or M in the space provided.

- |                   |       |                 |       |
|-------------------|-------|-----------------|-------|
| 1. sodium         | _____ | 11. iron        | _____ |
| 2. water          | _____ | 12. salt water  | _____ |
| 3. soil           | _____ | 13. ice cream   | _____ |
| 4. coffee         | _____ | 14. nitrogen    | _____ |
| 5. oxygen         | _____ | 15. eggs        | _____ |
| 6. alcohol        | _____ | 16. blood       | _____ |
| 7. carbon dioxide | _____ | 17. table salt  | _____ |
| 8. cake batter    | _____ | 18. nail polish | _____ |
| 9. air            | _____ | 19. milk        | _____ |
| 10. soup          | _____ | 20. cola        | _____ |



## Homogeneous vs. Heterogeneous Matter

Classify the following substances and mixtures as either homogeneous or heterogeneous. Place a ✓ in the correct column.

	HOMOGENEOUS	HETEROGENEOUS
1. flat soda pop		
2. cherry vanilla ice cream		
3. salad dressing		
4. sugar		
5. soil		
6. aluminum foil		
7. black coffee		
8. sugar water		
9. city air		
10. paint		
11. alcohol		
12. iron		
13. beach sand		
14. pure air		
15. spaghetti sauce		