

STATION 1: Chemical and Physical Changes and Properties

Answer the following in complete sentences.

1. List three physical properties of an iron nail.
 · metallic luster
 · gray color · high melting point · solid
2. List four indications that a chemical change has taken place
 · color Δ · heat exchange
 · gas production · ppt formed

How do you know that each of these is a chemical change?

3. Food spoils color Δ
4. A foaming antacid tablet fizzes in water gas production
5. A ring of scum forms around your bathtub ppt formed
6. Iron rusts color Δ
7. A firecracker explodes heat exchange

STATION 2: Chemical and Physical Changes and Properties

Classify each of the following as a physical or chemical change

1. Bending a piece of wire *physical* Δ
2. Burning coal *chemical* Δ
3. Cooking a steak *chemical* Δ
4. Cutting grass *physical* Δ

Classify the following properties of the element silicon as chemical or physical properties

5. Blue-gray color *physical*
6. Brittle *physical*
7. Insoluble in water *physical*
8. Melts at 1410°C *physical*
9. Reacts vigorously with fluorine *chemical*

STATION 3: Classification of Matter

Classify each of following as homogeneous or heterogeneous mixtures.

1. Blood heterogeneous
2. Chocolate-chip ice cream heterogeneous
3. Brass (an even blend of copper and zinc) homogeneous
4. Motor oil homogeneous
5. Black coffee homogeneous

Classify each of the following as an element or a mixture

6. Silver element
7. Pine tree mixture
8. Orange juice mixture
9. Oxygen element
10. Iced tea mixture
11. Air mixture

STATION 4: Classification of Matter

Name the elements found in each of the following compounds (use your periodic table)

1. Ammonium chloride (NH_4Cl) Nitrogen, Hydrogen, Chlorine
2. Potassium permanganate (KMnO_4) Potassium, Manganese, Oxygen
3. Isopropyl alcohol ($\text{C}_3\text{H}_7\text{OH}$) Carbon, Oxygen, Hydrogen
4. Calcium iodide (CaI_2) Calcium, Iodine

Identify each of the following as a mixture or a compound. For the mixtures, classify each as homogeneous or heterogeneous

5. Soda Homogeneous mixture
6. Candle wax Homogeneous mixture
7. Fog Heterogeneous mixture
8. Ink Homogeneous mixture
9. Egg Heterogeneous mixture
10. Ice Compound
11. Gasoline Homogeneous mixture
12. Blood Heterogeneous Mixture

STATION 5: States of Matter

Write the abbreviation used in chemistry for each of the following.

1. Solid (s)
2. Liquid (l)
3. Gas (g)
4. Aqueous (aq)
5. Precipitate (ppt)

Define each of the following.

6. Solid Definite shape & volume
7. Liquid Definite volume, takes shape of container
8. Gas Takes shape & volume of container
9. Aqueous Dissolved in water
10. Precipitate Solid formed from 2 solutions

STATION 6: Previous Material

Perform the following calculations. Round to the correct number of significant figures in your answer.

1. $(2.5 \times 10^{10})(3.2 \times 10^{-7})$ 8.0×10^3

2. $(6.2 \times 10^{24}) \div (2.3 \times 10^{12})$ 2.7×10^{12}

3. $(3.5 \times 10^3) + (6.3 \times 10^2)$ 4.1×10^3

4. $(6.3 \times 10^8) - (3.5 \times 10^7)$ 6.0×10^8

5. 1011×3.21 3250

6. $80 \div 5.7$ 10

7. $2001 + 1.125$ 2002

8. $20 - 10.5$ 10

STATION 7: Miscellaneous

1. Imagine first standing in the kitchen of your home and then in the middle of a park. When you view the surrounding in each location do you see mostly elements, compounds, or mixtures?

Kitchen: Mixtures

Park: Mixtures

2. Explain why this statement is false. "Because there is no change in composition during a physical change, the appearance of the substance will not change."

The appearance may Δ but the chemical composition does not.

3. What is the law of conservation of mass?

Mass is never created nor destroyed.