

## Organization of Matter Class Worksheet

1. In the laboratory, a student was given two solids and asked to identify them using the information in the following table.

Solid	Conducts Electricity	Is Magnetic	Density (g/cm <sup>3</sup> )
Copper	Yes	No	8.96
Iodine	No	No	4.93
Nickel	Yes	Yes	8.80
Titanium	Yes	No	4.70

He examined these solids and recorded his observations in the table below.

Solid	Conducts Electricity	Is Magnetic	Mass (g)	Volume (cm <sup>3</sup> )
1	Yes	Yes	66.8	7.6
2	Yes	No	29.6	6.3

What is each solid?

- A) Solid 1 is copper and solid 2 is nickel    C) Solid 1 is titanium and solid 2 is iodine  
B) Solid 1 is nickel and solid 2 is titanium    D) Solid 1 is iodine and solid 2 is copper

2. A group of 4 students are given two unknown liquids. They need to determine whether the two substances are the same or different. Each student proposes a different experiment to solve the question. Which student(s) is right?

1- The first student proposes to determine the density of the liquids

2- The second proposes to weigh the 2 liquids

3- The third says to find the freezing point of the liquids

4- The fourth says to do a litmus paper test on the liquids

- A) 1                                      B) 1 and 2                                      C) 3 and 4                                      D) 1 and 3

3. You conducted a laboratory experiment to identify the properties of an unknown liquid. These properties are as follows :

- The liquid turns cobalt chloride paper pink.    - The liquid has a density of 1.05 g/cm<sup>3</sup>.

- The liquid turns blue litmus paper red.    - The liquid conducts electricity.

Given these properties, which of the following statements is true?

- A) The unknown liquid is distilled water.    C) The unknown liquid is a basic solution.  
B) The unknown liquid is an acidic solution.    D) The unknown liquid is neutral

4. During a lab experiment, a student heats 15 g of copper powder which has a red-brown colour. After several minutes the student notices that the copper powder has become a black powder. He takes the mass of the black powder after the reaction and the mass has increased to 18.3 g.

- A) What type of chemical reaction occurred during the experiment?  
B) Why had the mass of the copper powder increased?  
C) Is the copper powder an element or a compound?  
D) Is the black powder an element or a compound?

5. In the laboratory, Christian performs experiments on two pure substances that he has been given. He records the following observations:

Substance 1	Characteristic	Before Heating	After Heating to 400°C
	Conductivity	none	none
	Colour	white	white
	Form	powder	granular
	Magnetism	none	none
	Mass	15.25 g	13.50 g
	Solubility in water	yes	no
		<b>Note.</b> A gas is released upon heating; this gas has a characteristic odour and is brownish in colour.	

Substance 2	Characteristic	Before Heating	After Heating to 400°C
	Conductivity	good	good
	Colour	gray	gray
	Form	rectangular	round
	Magnetism	none	none
	Mass	22.60 g	22.60 g
	Density	11.40 g/cm <sup>3</sup>	11.40 g/cm <sup>3</sup>
	Solubility in water	none	none

With the help of these notes, Christian has to describe each of these two substances in terms of element or compound.

- A) Substance one is a compound; substance 2 could be a compound or an element
- B) Substance 1 is an element; substance 2 is a compound.
- C) Substance 1 and 2 could be a compound or an element
- D) Substance 1 could be a compound or an element; substance 2 is an element