

Sample questions : **Metals, Metalloids, Non Metals**

- 1) An unknown powder causes an acid to bubble. Can it be a metalloid? A non metal?

No, no. Out of the 3 groups, only metals generate hydrogen from acid.

- 2) An unknown powder does not cause an acid to bubble. Can you be sure it's a non metal? Is another test needed?

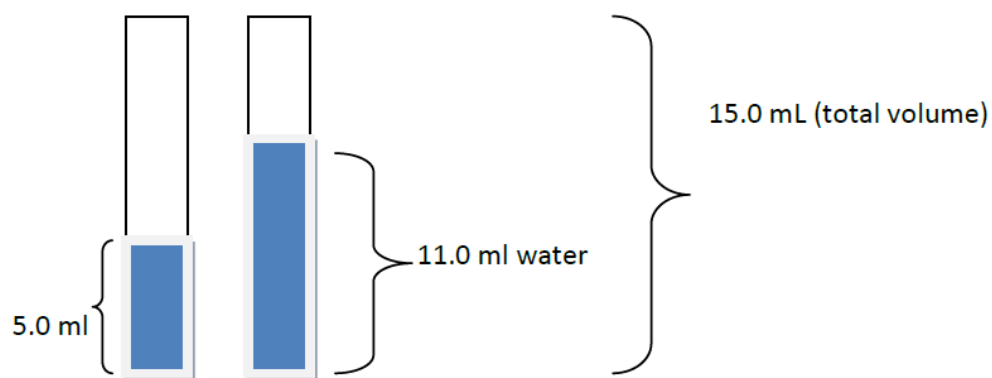
It could be either a metal loid or a non-metal. A conductivity test will tell them apart. Nonmetals don't conduct electricty.

- 3) Why can a powder lead you to an incorrect conclusion about conductivity?

Even a metallic powder may not conduct due to air spaces in between. A strip or solid chunk is best.

**Electrolysis of Water**

- 1) What do you have to do before inserting the electrode in the test tube?



The test tubes have to be filled with water and acid to speed up the process.

- 2) What is the volume of hydrogen collected if the following is seen?

$$15.0 - 5.0 = 10.0 \text{ ml}$$

- 3) Which gas collects at the positive electrode and in lower quantities when water is electrolyzed?

Oxygen (notice that we are not getting exactly 1 a 2: 1 ratio because of chlorine impurities in the water)

## Preparation and dilution of a Kool Aid solution

1. How much Kool Aid should you weigh if you need 500.0 ml of a 2.0 g/L solution?

$m = CV$

$$m = 2.0\text{g/L} (0.500\text{L}) = 1.0\text{ g}$$

2. Why is the beaker good for dissolving solutes but bad for measuring volume?

Its width makes it easier to get solids into the water, but the width also makes it inaccurate. Any extra volume added will spread out; the extra height added will not be obvious.

3. How did the concentration change when we only took part of the first solution and added water?

It decreased.

## The Reduction of Copper Oxide With Charcoal

### Sample questions:

1. Would we have concluded that mass was conserved if the limewater was also weighed? Why?

Yes because by weighing the limewater, we would be weighing  $\text{CO}_2$  that had escaped from the powders.

2. Why did the mass of the solids decrease?

Each charcoal atom (C) "snatched" a pair of oxygens from two separate copper oxides ( $\text{CuO}$ ).

3. What was the purpose of the charcoal?

To convert the compound  $\text{CuO}$  into the element copper (Cu)

## Neutralization of Acid With Base

1. What is the color of a solution with phenolphthalein if the acid is not neutralized yet?

Colorless

2. Is a neutral solution sour, salty or bitter?

Salty because a neutralization creates water and salt

3. Why is mixing important throughout the titration?

To make sure that you don't just neutralize the acid on the surface of the sample.