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oxide copper of formula empirical the determining of exp for revision about Worksheet الملف

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Ching Shuen

Name:

## KSSM CHEMISTRY:

### F4C3 Mol Concept, Chemical Formulae and Equations

3.3

#### Experiment: Determining the Empirical Formula of Copper (II) Oxide

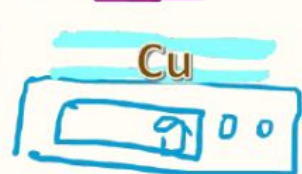
Step 1



Step 2



Step 4



#### Procedure:

1. Weigh the mass of 12 cm glass tube using an electronic balance and  its mass.
2.  some copper(II) oxide powder into the glass tube. Use the wooden splinter to move copper(II) oxide powder to the middle of the glass tube. Weigh the mass of the glass tube together with its contents and record the mass.
3.   $\frac{2}{3}$  of the boiling tube with water.
4. Close the boiling tube with a rubber stopper that has a 12 cm glass tube.  the boiling tube onto the retort stand.
5. Insert a few zinc granules into another boiling tube.  1.0 mol dm<sup>-3</sup> hydrochloric acid into the boiling tube until it is  $\frac{1}{3}$  full.
6.  the boiling tube with a rubber stopper that has a 10 cm glass tube. Clamp the boiling tube onto the other retort stand.
7.  the glass tube that contains copper(II) oxide powder as shown in Figure 3.13.

Guideline to determine the empirical formula of copper(II) oxide

<http://bit.ly/2VLQHq6>



How can you increase the rate of hydrogen gas produced?

Replace zinc granules with zinc \_\_\_\_\_

record

Fill

Clamp

Close

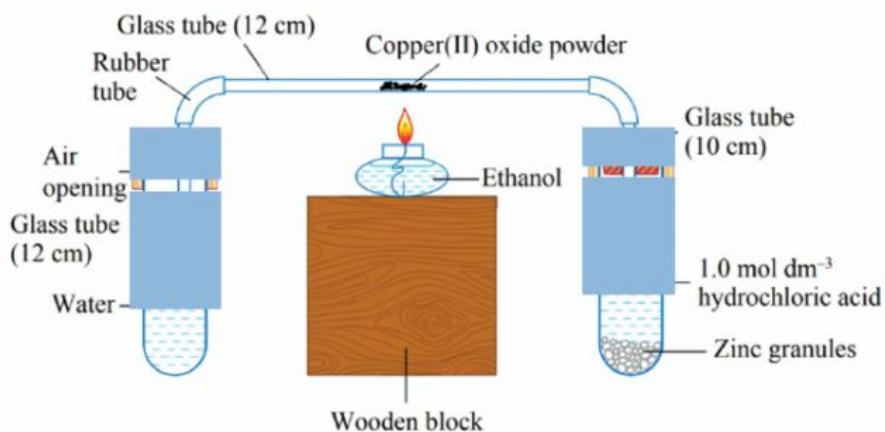
Put

Connect

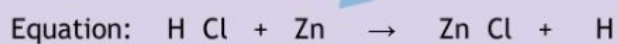
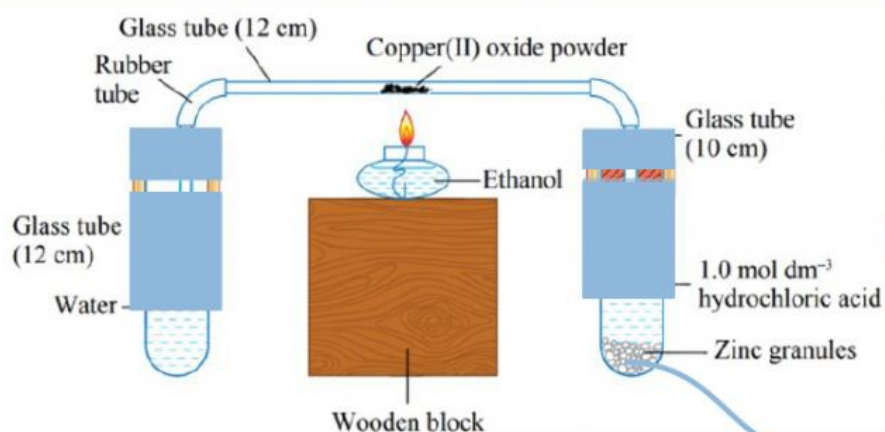
Add

## Match.

### CORRECT



### INCORRECT



8. Let the hydrogen gas  for 10 seconds by allowing the air bubbles to be released in the water before starting the heating process.
9.  copper(II) oxide using a spirit lamp with a continuous flow of hydrogen gas through the glass tube.
10. Stop the heating when the black colour of copper(II) oxide turns brown completely.
11. Keep a continuous flow of hydrogen gas until the glass tube is  back to room temperature.
12. Remove the glass tube that contains brown powder.  water drops at the end of the glass tube with a cotton bud.
13.  the mass of the glass tube together with its contents and record its mass.
14.  the heating, cooling and weighing processes from steps 9 to 13 until a constant mass reading is obtained.
15. Record the constant mass in Table 3.5.

Repeat

Heat

cooled

Eliminate

flow

Weigh

Connect all the boxes and fill in the blanks.

Step 5

Add hydrochloric acid into boiling tube containing zinc

Step 8

Let hydrogen gas flow for 10 seconds before heating

Step 11

During cooling, flow of \_\_\_\_\_ gas is continued

Step 14

Repeat the \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_ process until a \_\_\_\_\_ is obtained.

To make sure that \_\_\_\_\_

has been completely reduced to \_\_\_\_\_

i) To prevent \_\_\_\_\_ from reoxidising to copper (II) oxide again

ii) Prevent the backflow of water

To remove all the air in the glass tube

To produce \_\_\_\_\_ gas

Description	Mass (g)
Glass tube	25.00
Glass tube+ copper (II) oxide	29.00
Glass tube+ copper	28.20

Why can't we use this experiment to determine empirical formula of magnesium oxide?  
 Ans: magnesium is \_\_\_\_\_ reactive towards oxygen than hydrogen.

(RAM of Cu=64, O=16)

Element	Cu	O
Mass (g)		
Number of moles		
Ratio of moles		
Simplest ratio of moles		
Empirical formula =		

Just show value here (but you're advised to write calculation step in exam)

