Oxford Cambridge and RSA

GCSE Chemistry B (Twenty First Century Science)

J258/04 Depth in chemistry (Higher Tier)

Question Set 8

1. Alex does some experiments to make some salts.

(a) In his first experiment, he uses 0.2 moles of magnesium oxide. He works out the mass of magnesium oxide in 0.2 moles.

He uses this equation:
number of moles = mass of substance (g) ÷ relative formula mass (g)

Use the equation and the Periodic Table to work out the mass of magnesium oxide in 0.2 moles.

Give your answer to **1** decimal place.

[3]

Mass = ... g

(b) In another experiment, Alex reacts 4.0 g copper oxide with hydrochloric acid to make copper chloride. This is an equation for the reaction.

copper oxide + hydrochloric acid → copper chloride + water

$CuO + 2HCl \rightarrow CuCl_2 + H_2O$

Alex works out the mass of copper chloride he can make in the experiment.

He uses these relative formula masses.

Name of compound	Formula	Relative formula mass
copper oxide	CuO	79.5
copper chloride	$CuCl_2$	134.5

What mass of copper chloride can be made from 4.0 g of copper oxide?

Use the relative formula masses and the equation to help you.

Give your answer to **2** decimal places.

Mass = ... g **[4]**

(c) Alex adds 4.0 g of solid copper oxide to 25.0 cm^3 dilute hydrochloric acid.

At the end of the experiment, Alex sees that there is a problem because he has some unreacted solid left.

(i) How will this problem affect his actual yield? **[1]**

(ii) How could Alex change his experiment to solve this problem? **[1]**

Total Marks for Question Set 8: 9

Resource Materials

The Periodic Table of the Elements