**Chemical reactions**

In chemical reactions, substances are mixed and changes observed. This task is designed to make you think about what the particles are doing. You will need to be observant to consider what is happening.

**Part A**

¾ fill a test tube with hydrochloric acid (2M)

Add a piece of magnesium to the hydrochloric acid. (As a contrast, have one group use zinc foil in place of magnesium)

What do you observe?

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Test the gas by putting your thumb over the top of the test tube for about 30 secs and having your partner test the gas with a lit match.

What happens? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

What is the gas reacting with? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Write an equation for this gas test. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

You started with magnesium (or zinc) and hydrochloric acid. What has happened when this reaction occurred?

Can you write an equation in words, knowing that a gas was given off?

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Try and write an equation using symbols

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Use the diagram below to draw in more magnesium (or zinc) particles and the HCl particles to show them before the reaction and after the reaction.

Zn

**Part B**

What do you think is in the liquid in the test tube?

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How could you test for whether there is something there? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Add one group’s test tube contents to an evaporating basin and heat over a Bunsen in the fume cupboard.

What do you notice at the bottom of the evaporating basin? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

What do you think this material is? (Keep in mind what you actually mixed at the start)

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Draw in the particles in the evaporating basin before and after the reaction.

**Part C**

Add the liquid from the group that used zinc to a 100 mL beaker (must be zinc, magnesium will not work).

Add about 15 mL of water.

Sit two carbon electrodes in the beaker and connect to a power supply. Get your teacher to check the circuit. Turn the power supply on ( about 4 volts) and run for three minutes.

Turn the power supply off.

Examine the electrodes. What do you notice? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

What is the material on the negative electrode? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Use the diagram below to show what is happening in Part C.

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**Summary**

What happens to atoms during a chemical reaction?

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