



**ST MARY'S SCIENCE
DEPARTMENT:
CHEMISTRY**

H

**GCSE CHEMISTRY HOMEWORK BOOK
TOPIC 4: CHEMICAL CHANGE
STUDENT BOOK**

BOOK 1

YOU MUST ANSWER ALL THREE SECTIONS IN EACH PART OF THE HOMEWORK TASKS

NAME	
CLASS	
TEACHER	
FORM	

TASK	MARK	GRADE
1		
2		
3		
4		
OVERALL		

**GCSE
CHEMISTRY
YEAR 10
TOPIC 2a**



HOMEWORK SCHEDULE

Please use the following table to ensure each homework task is completed and submitted on time.

Carrying out these homework tasks can only increase your ability to gain a high grade in the GCSE examinations.

Failure to hand in work on time will lead to sanctions to complete this work.

Task	Submission Date	Completed?	On Time?
Task 1 Metal Oxides			
Task 2 Acids and Metals			
Task 3 Reactivity Series			
Task 4 Neutralisation			



SCIENCE DEPARTMENT MARKING CODE

ID = Insufficient detail in answer

W = Wrong understanding of science

IR = Irrelevant information given.

V = This is too vague to get a mark.

AQ = Answer the question asked

R = Read the question/information

M = Maths mistake

BOD = Benefit of the doubt given.

E = Explain the answer further please.

U = Wrong units used.

SF = Wrong significant figures used.

SP = Wrong spelling of a technical term

SR = Same reason given more than once.

A circle means this lost you marks

An underline means this gained you marks

PLEASE READ

This homework booklet has made with custom selected examination questions and activities to assess your understanding in the concepts covered in class. This will increase your familiarity with the style of examination questions.

Carrying out these questions can only increase your ability to gain a high grade in the GCSE examination.

Thank you for your hard work in completing this book, and good luck.

Mr. Turnbull

**TASK 1: METAL OXIDES****SPEC CHECK**

Content	Achieved?
Metals react with oxygen to produce metal oxides. The reactions are oxidation reactions because the metals gain oxygen.	
Students should be able to explain reduction and oxidation in terms of loss or gain of oxygen.	

Target Setting

In this assessed piece of work, what target should I look to achieve in completing this task?
Please refer to your marking feedback for your target.

From your previous work, fill in the following boxes with your personal progress in Physics.

What Topics Do I Know Well?

What Topics Do I Need to Revise?



SECTION A

This is a revision question on a previous topic.

You should aim to spend **10 minutes** answering this section.

1. This question is about hydrogen chloride.

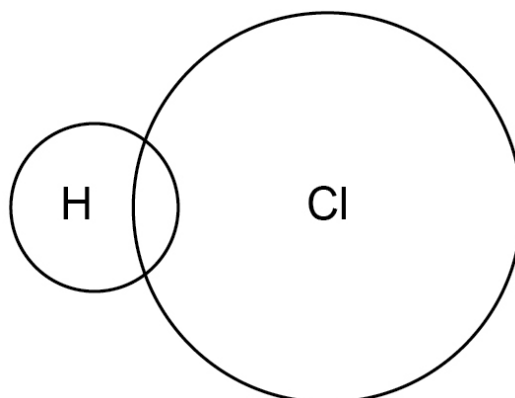
1.1 A hydrogen atom contains 1 electron and a chlorine atom contains 17 electrons.

Complete **Figure 1** to show a dot and cross diagram for a hydrogen chloride molecule.

Show the outer electrons only.

[2 marks]

Figure 1



Hydrogen gas (H_2) reacts with chlorine gas to produce hydrogen chloride.

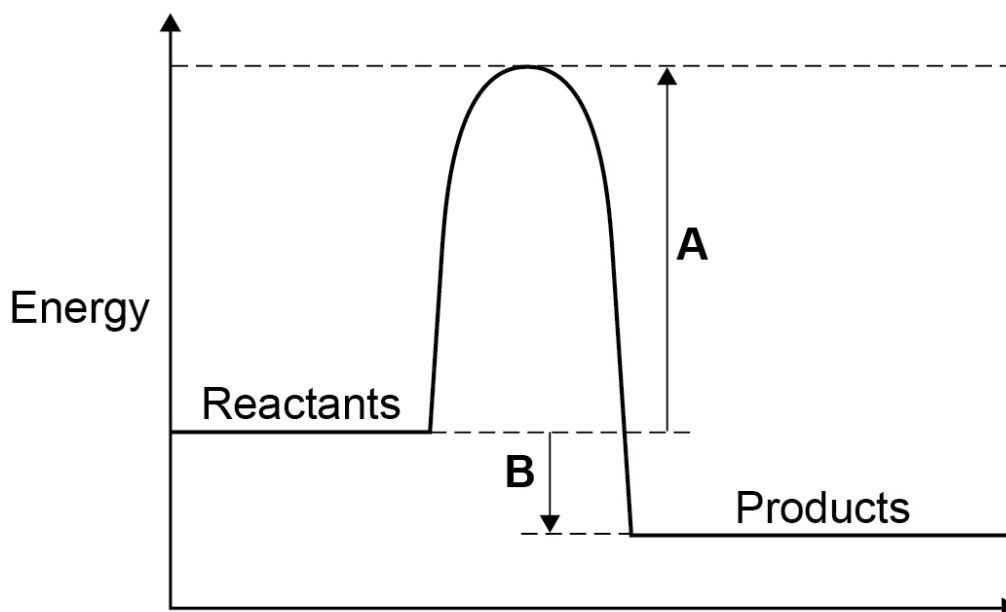
1.2 Complete the balanced chemical equation for the reaction between hydrogen and chlorine.

[2 marks]



Figure 2 shows the reaction profile diagram for the reaction between hydrogen and chlorine.

Figure 2





1.3 What do **A** and **B** represent on **Figure 2**?

[2 marks]

A

B

1.4 How does the reaction profile diagram show that the reaction is exothermic?

[1 mark]

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1.5 Hydrogen chloride gas dissolves in water to form hydrochloric acid.

Hydrochloric acid contains hydrogen ions and chloride ions.

Explain why hydrogen chloride gas does **not** conduct electricity but hydrochloric acid is able to conduct electricity.

[3 marks]

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SECTION B

This is a revision question on a previous topic.

You should aim to spend **10 minutes** answering this section.

1. Magnesium chloride, $MgCl_2$, can be made by the reaction of magnesium carbonate, $MgCO_3$, with hydrochloric acid.

A student reacts an excess of magnesium carbonate with a solution containing 3.65 g of hydrochloric acid.

Relative atomic masses, A_r values: H = 1, C = 12, O = 16, Mg = 24, Cl = 35.5

1.1 Write a balanced symbol equation for the reaction occurring.

[2 Marks]

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1.2 Calculate the maximum theoretical mass of magnesium chloride that could be produced from 3.65 g of hydrochloric acid.

[4 Marks]

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The student carries out the experiment and produces 4.30 g of magnesium chloride.

1.3 Calculate the percentage yield for the student's experiment.

[1 Mark]

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**SECTION C**

This is a challenge question to extend your understanding.

You should aim to spend **10 minutes** answering this section.

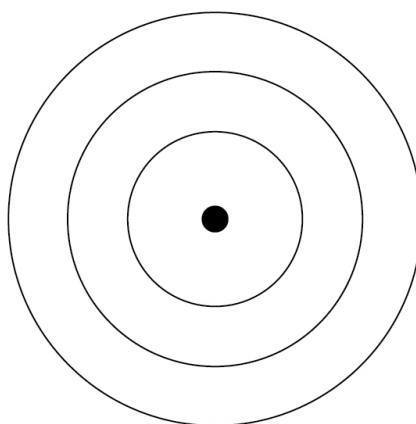
1. This question is about Group 1 elements.

1.1 A sodium atom is represented as ${}_{11}^{23}\text{Na}$.

Complete **Figure 6** to show the electronic structure of a sodium atom.

[1 mark]

Figure 6



A teacher demonstrated the reaction between lithium and water.

The teacher repeated the demonstration using sodium and then potassium with water.

1.2 The teacher wore eye protection.

Suggest **two other** safety precautions the teacher should take.

[2 marks]

Precaution 1

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.....

Precaution 2

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.....



1.3 Universal indicator is added to the solution formed in the reaction between potassium and water.

The universal indicator becomes purple in colour.

Which ion causes universal indicator to turn purple?

[1 mark]

Tick **one** box.

H⁺

K⁺

OH⁻

O²⁻



1.4 Table 3 gives the diameter of atoms of Group 1 elements.

Table 3

Element	Diameter of atom in nm
Lithium	0.304
Sodium	0.372
Potassium	0.454
Rubidium	0.496
Caesium	0.530

Explain how the diameter of the atom affects the reactivity of Group 1 elements.

[4 marks]

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FEEDBACK SHEET

Overall Mark:	/25	GRADE ACHIEVED:	
Section A: Mark	/10	9 <input type="checkbox"/>	5 <input type="checkbox"/>
Section B: Mark	/7	8 <input type="checkbox"/>	4 <input type="checkbox"/>
Section C: Mark	/8	7 <input type="checkbox"/>	3 <input type="checkbox"/>
		6 <input type="checkbox"/>	U <input type="checkbox"/>

Knowledge and understanding shown	Unsatisfactory	Satisfactory	Good	Outstanding
Strengths:	<input type="checkbox"/> Basic Knowledge of Concepts <input type="checkbox"/> Quality of Written Communication <input type="checkbox"/> Working Scientifically <input type="checkbox"/> Answering Examination Questions <input type="checkbox"/> Analytical Skills Others (Topic Specific)			
Areas to Improve:	<input type="checkbox"/> Basic Knowledge of Concepts <input type="checkbox"/> Quality of Written Communication <input type="checkbox"/> Working Scientifically <input type="checkbox"/> Answering Examination Questions <input type="checkbox"/> Analytical Skills Others (Topic Specific)			
Progress:	Unsatisfactory	Satisfactory	Good	Outstanding
Working:	Below	In line with	Above	(your target)
Effort:	Poor	Inconsistent	Good	Excellent

To improve further you need to:

<input type="checkbox"/> Carry out independent revision. <input type="checkbox"/> Complete outstanding work. <input type="checkbox"/> Make corrections as indicated by the teacher. <input type="checkbox"/> Attend intervention for this topic <input type="checkbox"/> Include more information in responses. <input type="checkbox"/> Include more key words in responses. <input type="checkbox"/> Attend departmental revision sessions. <input type="checkbox"/> Read the questions carefully. <input type="checkbox"/> Explain your answers in more detail. <input type="checkbox"/> Carry out revision on Seneca Learning.	<input type="checkbox"/> Revise the equations. <input type="checkbox"/> Check the units on answers. <input type="checkbox"/> Check the correct amount of sig figs on answers. <input type="checkbox"/> Check to convert values correctly. <input type="checkbox"/> Show your full working out. <input type="checkbox"/> Check your calculations. <input type="checkbox"/> Revise the science investigative skills. <input type="checkbox"/> Revise the key concepts of the topics. <input type="checkbox"/> Thoroughly check your work for mistakes. Other:
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Student response

**TASK 2: ACIDS AND METALS****SPEC CHECK**

Content	Achieved?
Acids react with some metals to produce salts and hydrogen.	
(HT only) Students should be able to: <ul style="list-style-type: none">• Explain in terms of gain or loss of electrons, that these are redox reactions• Identify which species are oxidised and which are reduced in given chemical equations.	
Knowledge of reactions limited to those of magnesium, zinc and iron with hydrochloric and sulfuric acids.	

Target Setting

In this assessed piece of work, what target should I look to achieve in completing this task?
Please refer to your marking feedback for your target.

From your previous work, fill in the following boxes with your personal progress in Physics.

What Topics Do I Know Well?**What Topics Do I Need to Revise?**



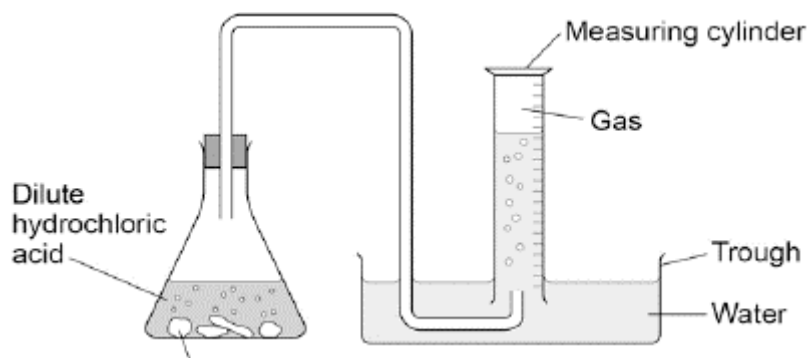
SECTION A

This is a revision question on a previous topic.

You should aim to spend **10 minutes** answering this section.

- 1.** A student investigated the reaction of sodium carbonate with dilute hydrochloric acid. The student used the apparatus shown in **Figure 1**.

Figure 1



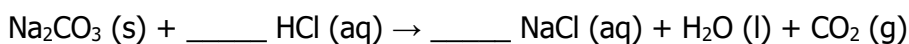
Sodium carbonate

This is the method used.

- 1.** Place a known mass of sodium carbonate in a conical flask.
- 2.** Measure 15 cm³ of dilute hydrochloric acid using a measuring cylinder.
- 3.** Pour the acid into the conical flask.
- 4.** Place a bung in the flask and collect the gas as shown in **Figure 1**.

- 1.1** Balance the equation for the reaction.

[1 mark]



- 1.2** Name the substance produced as a gas.

[1 mark]

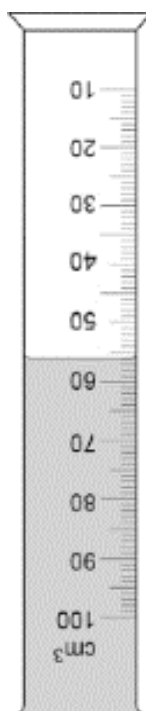
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Figure 2 shows the measuring cylinder.

Figure 2



1.3 What volume of gas has been collected?

[1 mark]

Volume = _____ cm³

1.4 Table 1 shows the student's results.

Table 1

Mass of sodium carbonate in g	Volume of gas in cm ³
0.0	0
0.1	23
0.2	28
0.3	69
0.4	92
0.5	98
0.6	98
0.7	98

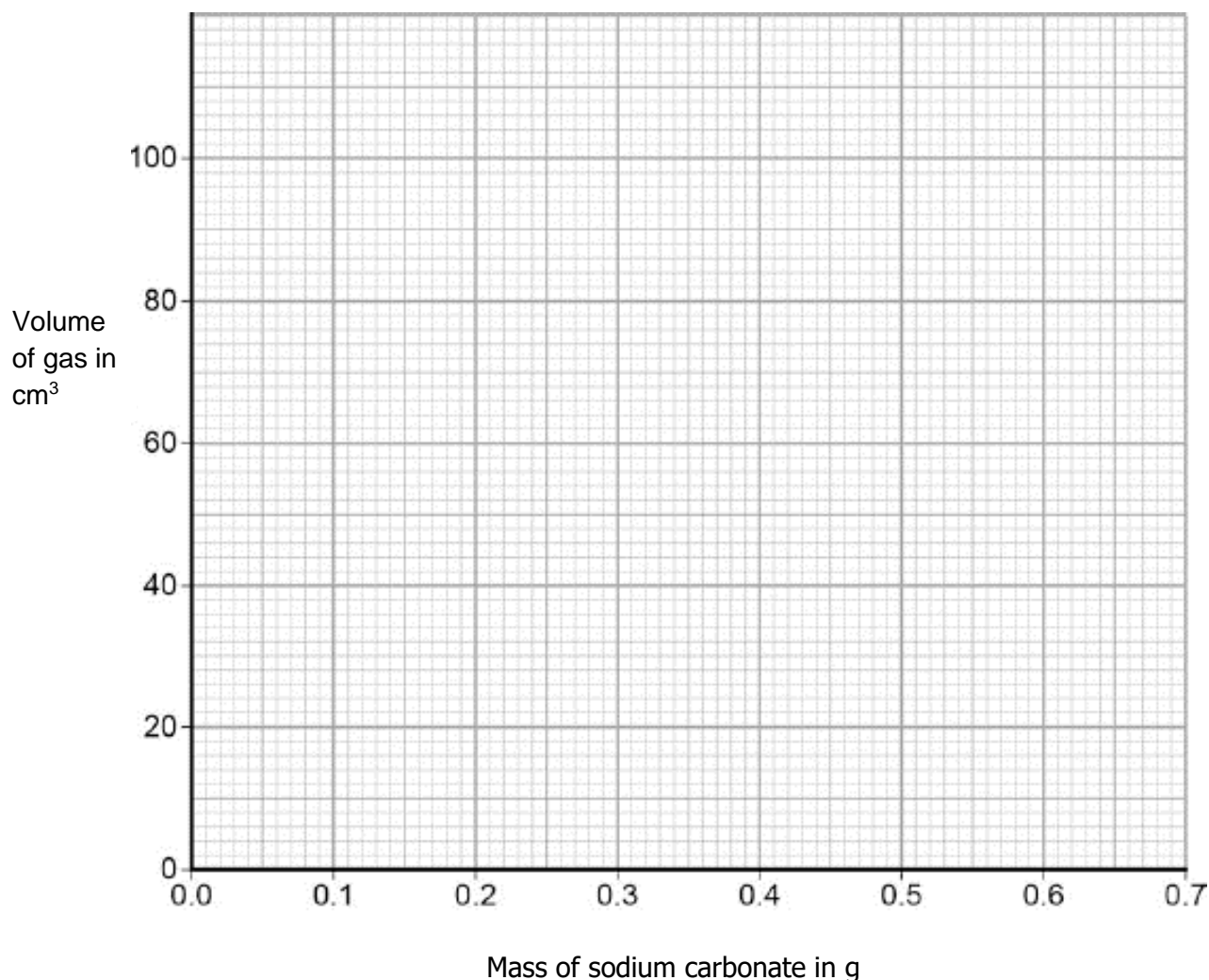


On **Figure 3**:

- Plot these results on the grid.
- Complete the graph by drawing **two** straight lines of best fit.

[4 marks]

Figure 3



1.5 Describe **two** patterns the graph shows when sodium carbonate is added.

[2 marks]

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**SECTION B**

This is a question to revise understanding carried out in lesson.

You should aim to spend **10 minutes** answering this section.

1.1 Write the word equation for the reaction of magnesium with sulfuric acid.

[1 Mark]

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1.2 Construct a balanced equation for this reaction.

[2 Marks]

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1.3 Predict what you would observe during the reaction.

[1 Mark]

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Many metals react with oxygen to produce metal oxides.

1.4 Write a word equation for the reaction of calcium with oxygen.

[1 Mark]

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1.5 Construct a balanced equation, including state symbols, for this reaction.

[1 Mark]

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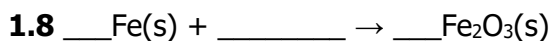
Complete and balance the following equations



[1 Mark]



[1 Mark]



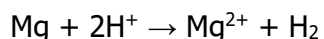
[1 Mark]

**SECTION C**

This is a challenge question to extend your understanding.

You should aim to spend **10 minutes** answering this section.

1. Ionic equations show how electrons are transferred during reactions. When magnesium reacts with hydrochloric acid, magnesium chloride and hydrogen are formed. This can be shown using an ionic equation:



1.1 Which substance is being oxidised? How can you tell?

[2 Marks]

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1.2 Which substance is being reduced? How can you tell?

[2 Marks]

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1.3 Explain whether the following statement is true.

When metals react with acids, the metals will always be oxidised, and hydrogen will always be reduced.

[3 Marks]

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FEEDBACK SHEET

Overall Mark:	/25	GRADE ACHIEVED:	
Section A: Mark	/9	9 <input type="checkbox"/>	5 <input type="checkbox"/>
Section B: Mark	/9	8 <input type="checkbox"/>	4 <input type="checkbox"/>
Section C: Mark	/7	7 <input type="checkbox"/>	3 <input type="checkbox"/>
		6 <input type="checkbox"/>	U <input type="checkbox"/>

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Areas to Improve:	<input type="checkbox"/> Basic Knowledge of Concepts <input type="checkbox"/> Quality of Written Communication <input type="checkbox"/> Working Scientifically <input type="checkbox"/> Answering Examination Questions <input type="checkbox"/> Analytical Skills Others (Topic Specific)		<input type="checkbox"/> Applications of Concepts <input type="checkbox"/> Mathematical Skills <input type="checkbox"/> Experimental Technique <input type="checkbox"/> Previous Topics <input type="checkbox"/> Problem Solving	
Progress:	Unsatisfactory	Satisfactory	Good	Outstanding
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Student response

**TASK 3: REACTIVITY SERIES****SPEC CHECK**

Content	Achieved?
When metals react with other substances the metal atoms form positive ions. The reactivity of a metal is related to its tendency to form positive ions. Metals can be arranged in order of their reactivity in a reactivity series. The metals potassium, sodium, lithium, calcium, magnesium, zinc, iron and copper can be put in order of their reactivity from their reactions with water and dilute acids.	
The non-metals hydrogen and carbon are often included in the reactivity series.	
A more reactive metal can displace a less reactive metal from a compound.	
Students should be able to: <ul style="list-style-type: none">• Recall and describe the reactions, if any, of potassium, sodium, lithium, calcium, magnesium, zinc, iron and copper with water or dilute acids and where appropriate, to place these metals in order of reactivity• Explain how the reactivity of metals with water or dilute acids is related to the tendency of the metal to form its positive ion• Deduce an order of reactivity of metals based on experimental results.	
The reactions of metals with water and acids are limited to room temperature and do not include reactions with steam.	



Target Setting

In this assessed piece of work, what target should I look to achieve in completing this task?
Please refer to your marking feedback for your target.

From your previous work, fill in the following boxes with your personal progress in Physics.

What Topics Do I Know Well?

What Topics Do I Need to Revise?

**SECTION A**

This is a revision question on a previous topic.

You should aim to spend **10 minutes** answering this section.

1. A teacher demonstrated the extraction of copper from copper oxide.

This is the method used.

1. Mix 1.30 g of zinc and 1.59 g of copper oxide.

2. Heat the mixture strongly.

3. When the mixture starts to glow, stop heating.

4. Let the glow spread through the mixture.

5. Leave the mixture to cool.

6. Add hydrochloric acid to the cooled mixture.

7. Filter the mixture obtained in **step 6**.

1.1 A student concluded that an exothermic reaction had taken place.

Explain how an observation made during the demonstration shows this.

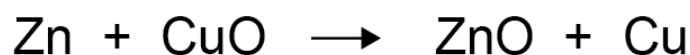
[2 marks]

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1.2 The equation for the reaction between zinc and copper oxide is:



1.59 g of copper oxide reacted.

Calculate the mass of copper produced.

Relative atomic masses (A_r): Cu = 63.5 O = 16 Zn = 65

[3 marks]

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1.3 Explain why **steps 6** and **7** result in only copper being obtained as the residue.

[4 marks]

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1.4 The ionic equation for the reaction is:

Which statement about the reaction between zinc and copper ions is correct?

[1 mark]

Tick **one** box.

Copper ions have been oxidised because the copper ions have gained electrons.

Copper ions have been oxidised because the copper ions have lost electrons.

Zinc has been oxidised because the zinc atoms have gained electrons.

Zinc has been oxidised because the zinc atoms have lost electrons.

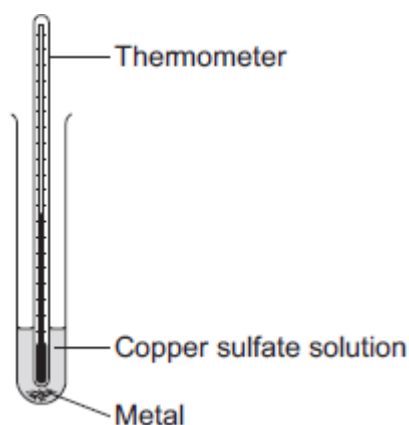
**SECTION B**

This is a question to revise understanding carried out in lesson.

You should aim to spend **10 minutes** answering this section.

1. A student investigated displacement reactions of metals. The student added different metals to copper sulfate solution and measured the temperature change. The more reactive the metal is compared with copper, the bigger the temperature change. The apparatus the student used is shown in **Figure 5**.

Figure 5



The student repeated the experiment three times with each metal. **Table 2** shows the mean temperature change for each metal.

Table 2

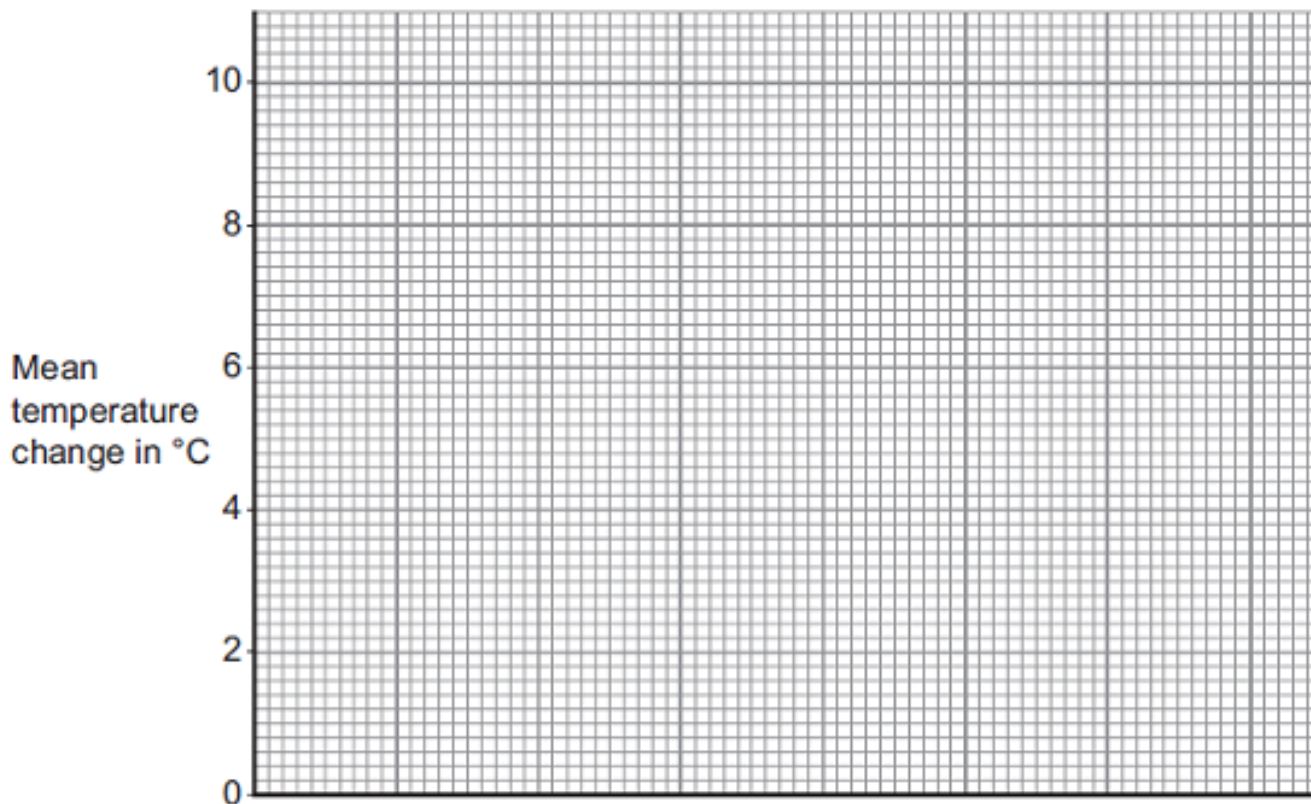
Metal	Mean temperature change in °C
Copper	0.0
Iron	6.5
Lead	1.2
Magnesium	10.0
Silver	0.0
Zinc	7.8



1.1 On **Figure 6**, draw a bar chart to show the results.

[2 marks]

Figure 6



1.2 Why is a bar chart the most suitable way of showing the results?

[1 mark]

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1.3 Explain how these results can be used to work out a reactivity series.

[1 mark]

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1.4 Iron can be extracted by reacting iron oxide with carbon in a blast furnace.
What type of reaction produces iron from iron oxide?

[1 mark]

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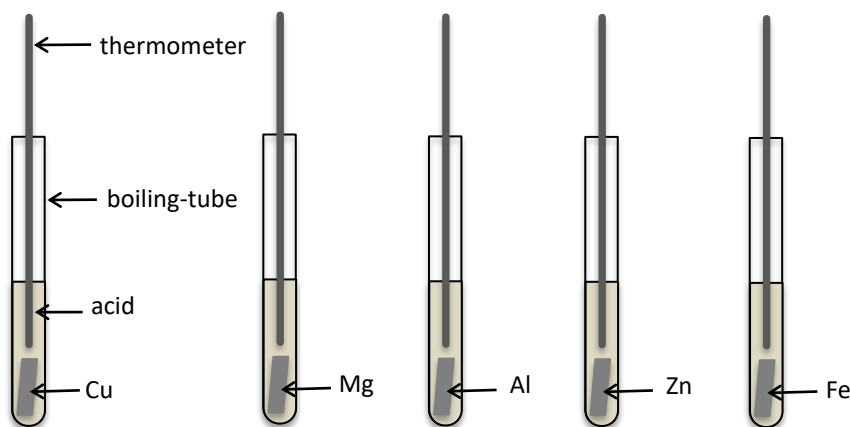
SECTION C

This is a challenge question to extend your understanding.

You should aim to spend **10 minutes** answering this section.

1. A student investigated the reactivity of metals with acids. Five different metals were investigated. **Figure 4** shows the apparatus the student used.

Figure 4



The method the student used was:

Measured 10 cm³ of dilute acid using a 50cm³ measuring cylinder

Placed 10 cm³ of dilute acid in a boiling tube

Added a 2 cm length of metal to the dilute acid

Measured the highest temperature reached

Repeated the experiment using different metals.

Table 1 shows the student's results

Table 1

Metal	Temperature change (°C)			
	Test 1	Test 2	Test 3	Mean
Aluminium	33	10	35	
Copper	1	0	2	1
Iron	22	21	20	21
Magnesium	44	46	45	45
Zinc	25	27	26	26

- 1.1** State the dependent and independent variables in the investigation.

[2 marks]

Dependent Variable _____

Independent Variable _____



1.2 Name **two** control variables the student kept the same.

[2 marks]

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1.3 Calculate the mean temperature change for aluminium.

[1 mark]

Mean Temperature Change for Aluminium = _____ °C

1.4 Suggest **two** changes that could improve the accuracy of the investigation.

[2 marks]

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1.5 Use the data in **Table 1** to list the metals in order of reactivity from most reactive to least reactive.

[1 mark]

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1.6 Suggest why the student did not use any Group 1 metals in the investigation.

[1 mark]

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FEEDBACK SHEET

Overall Mark:	/24	GRADE ACHIEVED:	
Section A: Mark	/10	9 <input type="checkbox"/>	5 <input type="checkbox"/>
Section B: Mark	/5	8 <input type="checkbox"/>	4 <input type="checkbox"/>
Section C: Mark	/9	7 <input type="checkbox"/>	3 <input type="checkbox"/>
		6 <input type="checkbox"/>	U <input type="checkbox"/>

Knowledge and understanding shown	Unsatisfactory	Satisfactory	Good	Outstanding
Strengths:	<input type="checkbox"/> Basic Knowledge of Concepts <input type="checkbox"/> Applications of Concepts <input type="checkbox"/> Quality of Written Communication <input type="checkbox"/> Mathematical Skills <input type="checkbox"/> Working Scientifically <input type="checkbox"/> Experimental Technique <input type="checkbox"/> Answering Examination Questions <input type="checkbox"/> Previous Topics <input type="checkbox"/> Analytical Skills <input type="checkbox"/> Problem Solving Others (Topic Specific)			
Areas to Improve:	<input type="checkbox"/> Basic Knowledge of Concepts <input type="checkbox"/> Applications of Concepts <input type="checkbox"/> Quality of Written Communication <input type="checkbox"/> Mathematical Skills <input type="checkbox"/> Working Scientifically <input type="checkbox"/> Experimental Technique <input type="checkbox"/> Answering Examination Questions <input type="checkbox"/> Previous Topics <input type="checkbox"/> Analytical Skills <input type="checkbox"/> Problem Solving Others (Topic Specific)			
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Student response



TASK 4: NEUTRALISATION

SPEC CHECK

Content	Achieved?
Acids are neutralised by alkalis (e.g. soluble metal hydroxides) and bases (e.g. insoluble metal hydroxides and metal oxides) to produce salts and water, and by metal carbonates to produce salts, water and carbon dioxide.	
The particular salt produced in any reaction between an acid and a base or alkali depends on: <ul style="list-style-type: none"> • The acid used (hydrochloric acid produces chlorides, nitric acid produces nitrates, sulfuric acid produces sulfates) • The positive ions in the base, alkali or carbonate. 	
Students should be able to: <ul style="list-style-type: none"> • Predict products from given reactants • Use the formulae of common ions to deduce the formulae of salts. 	
Soluble salts can be made from acids by reacting them with solid insoluble substances, such as metals, metal oxides, hydroxides or carbonates. The solid is added to the acid until no more reacts and the excess solid is filtered off to produce a solution of the salt.	
Salt solutions can be crystallised to produce solid salts.	
Students should be able to describe how to make pure, dry samples of named soluble salts from information provided.	
Required Practical 1: preparation of a pure, dry sample of a soluble salt from an insoluble oxide or carbonate using a Bunsen burner to heat dilute acid and a water bath or electric heater to evaporate the solution.	



Target Setting

In this assessed piece of work, what target should I look to achieve in completing this task?
Please refer to your marking feedback for your target.

From your previous work, fill in the following boxes with your personal progress in Physics.

What Topics Do I Know Well?

What Topics Do I Need to Revise?



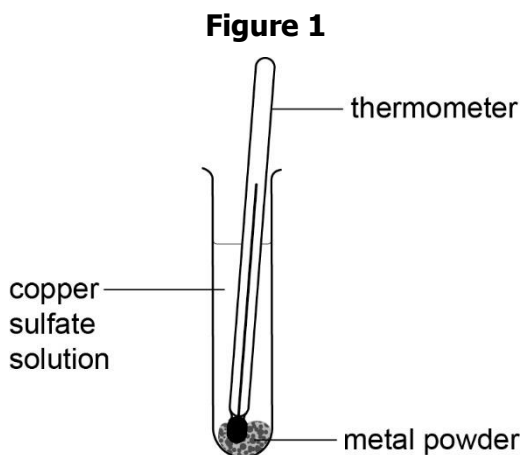
SECTION A

This is a revision question on a previous topic.

You should aim to spend **10 minutes** answering this section.

1. A student investigated the reactivity of metals.

Figure 1 shows the apparatus the student used.



The student:

Measured the temperature of the copper sulfate solution

Added metal powder

Measured the temperature of the mixture.

1.1 State **two** control variables the student should use.

[2 Marks]

Variable **1**

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.....

Variable **2**

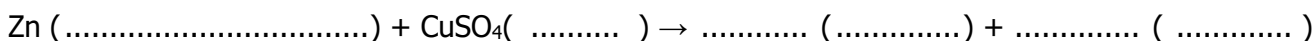
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The student added zinc powder to copper sulfate solution. The solution was decolourised and a red / brown powder formed.

1.2 Complete the equation, including state symbols for the reaction.

[3 Marks]





The student added different metals to copper sulfate solution and measured the maximum temperature rise.

Table 1 shows the student's results.

Table 1

Metal	Maximum temperature rise in °C
Copper	0.0
Magnesium	9.3
Nickel	3.2
Silver	0.0
Tungsten	0.0
Zinc	7.1

1.3 Use these results to place the metals in **Table 1** in an estimated order of reactivity.

[2 Marks]

Most Reactive

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Less Reactive

1.4 Explain why it is not possible to be certain about the order of reactivity.

[2 Marks]

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.....

1.5 Suggest how you could gain more information to improve your order of reactivity.

[2 Marks]

.....

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Magnesium reacts with hydrochloric acid to form a salt magnesium chloride.

The salts, potassium chloride and copper chloride are **not** produced by reacting the metal with hydrochloric acid.

1.6 Give **one** reason why for each metal.

[2 Marks]

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**SECTION C**

This is a challenge question to extend your understanding.

You should aim to spend **10 minutes** answering this section.

1. Copper oxide is insoluble.

1.1 What type of substance is copper oxide?

[1 Mark]

A Acid

B Alkali

C Salt

D Base

Copper oxide, CuO , reacts with hydrochloric acid, HCl , to produce copper chloride, CuCl_2 and water.

1.2 Name the type of reaction taking place.

[1 Mark]

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.....

1.3 Write a balanced symbol equation for the reaction.

[2 Marks]

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1.4 Describe how you could produce pure dry crystals of copper chloride from copper oxide and dilute hydrochloric acid.

[6 Marks]

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FEEDBACK SHEET

Overall Mark:	/30	GRADE ACHIEVED:	
Section A: Mark	/12	9 <input type="checkbox"/>	5 <input type="checkbox"/>
Section B: Mark	/8	8 <input type="checkbox"/>	4 <input type="checkbox"/>
Section C: Mark	/10	7 <input type="checkbox"/>	3 <input type="checkbox"/>
		6 <input type="checkbox"/>	U <input type="checkbox"/>

Knowledge and understanding shown	Unsatisfactory	Satisfactory	Good	Outstanding
Strengths:	<input type="checkbox"/> Basic Knowledge of Concepts <input type="checkbox"/> Quality of Written Communication <input type="checkbox"/> Working Scientifically <input type="checkbox"/> Answering Examination Questions <input type="checkbox"/> Analytical Skills Others (Topic Specific)		<input type="checkbox"/> Applications of Concepts <input type="checkbox"/> Mathematical Skills <input type="checkbox"/> Experimental Technique <input type="checkbox"/> Previous Topics <input type="checkbox"/> Problem Solving	
Areas to Improve:	<input type="checkbox"/> Basic Knowledge of Concepts <input type="checkbox"/> Quality of Written Communication <input type="checkbox"/> Working Scientifically <input type="checkbox"/> Answering Examination Questions <input type="checkbox"/> Analytical Skills Others (Topic Specific)		<input type="checkbox"/> Applications of Concepts <input type="checkbox"/> Mathematical Skills <input type="checkbox"/> Experimental Technique <input type="checkbox"/> Previous Topics <input type="checkbox"/> Problem Solving	
Progress:	Unsatisfactory	Satisfactory	Good	Outstanding
Working:	Below	In line with	Above	(your target)
Effort:	Poor	Inconsistent	Good	Excellent

To improve further you need to:

<input type="checkbox"/> Carry out independent revision. <input type="checkbox"/> Complete outstanding work. <input type="checkbox"/> Make corrections as indicated by the teacher. <input type="checkbox"/> Attend intervention for this topic <input type="checkbox"/> Include more information in responses. <input type="checkbox"/> Include more key words in responses. <input type="checkbox"/> Attend departmental revision sessions. <input type="checkbox"/> Read the questions carefully. <input type="checkbox"/> Explain your answers in more detail. <input type="checkbox"/> Carry out revision on Seneca Learning.	<input type="checkbox"/> Revise the equations. <input type="checkbox"/> Check the units on answers. <input type="checkbox"/> Check the correct amount of sig figs on answers. <input type="checkbox"/> Check to convert values correctly. <input type="checkbox"/> Show your full working out. <input type="checkbox"/> Check your calculations. <input type="checkbox"/> Revise the science investigative skills. <input type="checkbox"/> Revise the key concepts of the topics. <input type="checkbox"/> Thoroughly check your work for mistakes. Other:
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Student response



The Periodic Table of Elements

1	2	3	4	5	6	7	0										
7 Li lithium 3	9 Be beryllium 4	11 Na sodium 11	12 C carbon 6	13 Al aluminium 13	14 N nitrogen 7	15 P phosphorus 15	16 O oxygen 8	17 F fluorine 9	18 Ar argon 18								
19 K potassium 19	20 Ca calcium 20	23 Sc scandium 21	24 Ti titanium 22	27 V vanadium 23	28 Cr chromium 24	29 Mn manganese 25	30 Fe iron 26	31 Co cobalt 27	32 Ni nickel 28	33 Cu copper 29	34 Zn zinc 30	35 Ga gallium 31	36 Ge germanium 32	37 As arsenic 33	38 Se selenium 34	39 Br bromine 35	40 Kr krypton 36
37 Rb rubidium 37	38 Sr strontium 38	39 Y yttrium 39	40 Zr zirconium 40	41 Nb niobium 41	42 Mo molybdenum 42	43 Tc technetium [97]	44 Ru ruthenium 44	45 Rh rhodium 45	46 Pd palladium 46	47 Ag silver 47	48 Cd cadmium 48	49 In indium 49	50 Sn tin 50	51 Sb antimony 51	52 Te tellurium 52	53 I iodine 53	54 Xe xenon 54
55 Cs caesium 55	56 Ba barium 56	57 La* lanthanum 57	72 Hf hafnium 72	73 Ta tantalum 73	74 W tungsten 74	75 Re rhenium 75	76 Os osmium 76	77 Ir iridium 77	78 Pt platinum 78	79 Au gold 79	80 Hg mercury 80	81 Tl thallium 81	82 Pb lead 82	83 Bi bismuth 83	84 Po polonium 84	85 At astatine 85	86 Rn radon 86
[223] Fr francium 87	[226] Ra radium 88	[227] Ac* actinium 89	104 Rf rutherfordium 104	105 Db dubnium 105	106 Sg seaborgium 106	107 Bh bohrium 107	108 Hs hassium 108	109 Mt meitnerium 109	110 Ds darmstadtium 110	111 Rg roentgenium 111	112 Cn copernicium 112	113 Nh nihonium 113	114 Fl flerovium 114	115 Mc moscovium 115	116 Lv livermorium 116	117 Ts tennessine 117	118 Og oganesson 118

1	H	1
	hydrogen	

Key

relative atomic mass
atomic symbol
name
atomic (proton) number

* The Lanthanides (atomic numbers 58 – 71) and the Actinides (atomic numbers 90 – 103) have been omitted. Relative atomic masses for Cu and Cl have not been rounded to the nearest whole number.



Acknowledgements

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This document has been produced for the AQA GCSE Science Specification.

