



## Year 8 Reaction and Magnets HW Questions

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31 minutes



44 marks

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- Q1.** Different elements have a wide variety of properties.  
The list gives some of them.

**brittle**

**good electrical conductor**

**good thermal conductor**

**insulator**

**magnetic**

**melting point above room temperature**

- (a) Magnesium is a metal. Give **two** properties of magnesium from the list above.

1. ....

2. ....

2 marks

- (b) (i) What is the name of the compound formed when magnesium reacts with sulphur?

.....

1 mark

- (ii) Give **two** properties from the list above which this solid compound will **not** have.

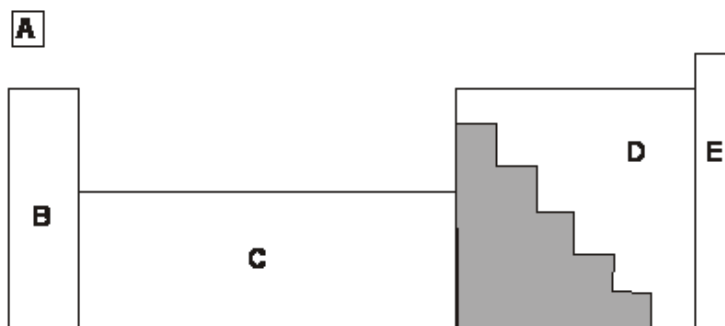
1. ....

2. ....

2 marks

Maximum 5 marks

**Q2.** (a) The diagram below shows part of the periodic table of elements.



The shaded area contains **only** metal elements.

Two other areas also contain **only** metal elements.

Which areas contain only metal elements?

Tick the **two** correct boxes.

A ☐

B ☐

C ☐

D ☐

E ☐

1 mark

(b) Copper is a metal.

At room temperature copper is a strong solid.

Give **two** other properties of copper that show it is a metal.

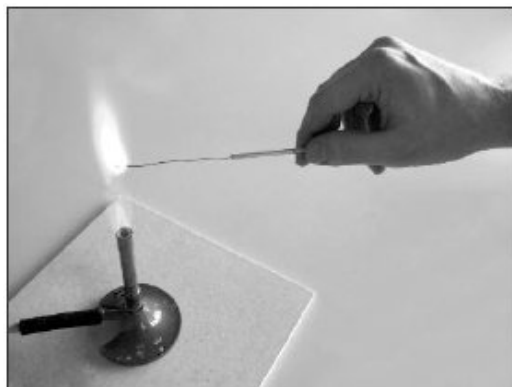
1. ....

1 mark

2. ....

1 mark

(c) When copper metal is heated it reacts with a gas in air.



What is the chemical name of the **product** formed when copper reacts with a gas in air?

.....

1 mark

- (d) Which statement below describes what happens in a **chemical change** but **not** in a physical change?

Tick the correct box.

The product is a solid.

☐

The change only happens at a high temperature.

☐

The atoms have combined in a different way to make a new substance.

☐

The types of atoms at the start are the same as in the end product.

☐

1 mark  
maximum 5 marks

- Q3.** A science teacher showed her class three experiments, A, B and C.  
The experiments and the word equations for the reactions that took place are shown below.  
All the experiments were done in a fume cupboard.

**experiment A**

calcium carbonate is heated

calcium carbonate

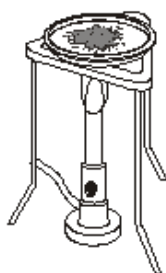
calcium oxide forms in the test tube

carbon dioxide is collected here

**word equation**      calcium carbonate       $\longrightarrow$       calcium oxide + carbon dioxide

### experiment B

iron filings and sulphur are heated together



**word equation**

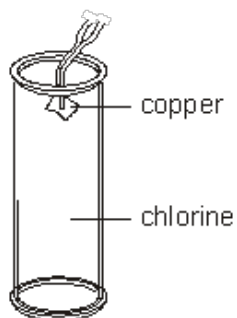
iron + sulphur



iron sulphide

### experiment C

hot copper is added to chlorine



piece of copper covered with brownish solid



**word equation**

copper + chlorine



\_\_\_\_\_

(a) From the substances in experiments A, B and C, above, give the name of:

(i) **one** metallic element;

.....

1 mark

(ii) **one** non-metallic element;

.....

1 mark

(iii) **two** compounds.

..... and .....

1 mark

(b) In experiment B, the iron filings weighed 2.0 g at the beginning of the experiment and the iron sulphide produced weighed 2.8 g.

Explain this increase in mass.

.....

.....

1 mark

(c) Complete the word equation for the chemical reaction in experiment C.

copper + chlorine ? .....

1 mark  
maximum 5 marks

##

The table contains information about five metals, A, B, C, D and E.

<b>Metal</b>	<b>how it reacts with cold water</b>	<b>how it reacts with hot water</b>
A	no reaction	extremely slowly
B	no reaction	no reaction
C	hardly at all	slowly
D	slowly	quickly
E	quickly	very violently

(a) Use the information in the table to arrange the metals in order of reactivity.

most reactive .....

.....

.....

least reactive .....

1 mark

(b) (i) Which metal in the table could be copper?

.....

1 mark

(ii) Which metal in the table could be sodium?

.....

1 mark

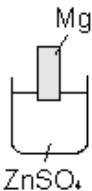
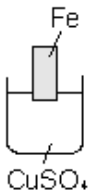
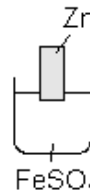
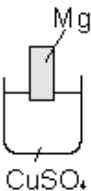
(iii) Which metal in the table could be iron?

.....

1 mark  
Maximum 4 marks

- Q5.** An experiment is carried out to find the relative reactivities of **four** metals: copper, magnesium, iron and zinc.

Strips of **three** of the metals are placed in dilute solutions of different sulphates, as shown below, and left for the same length of time

<b>diagram of experiment</b>				
<b>colour of metal at start</b>	silver coloured	dark grey	light grey	silver coloured
<b>colour of solution at start</b>	colourless	pale blue	pale green	pale blue
<b>appearance of metal at end</b>	light grey	brown		
<b>colour of solution at end</b>	colourless	pale green	colourless	

- (a) Use the information in the table to place the **four** metals in order of reactivity.

most reactive .....

.....

.....

least reactive .....

1 mark

- (b) Use the appropriate descriptions given in the table to help you complete the **three** missing parts of the table.

2 marks

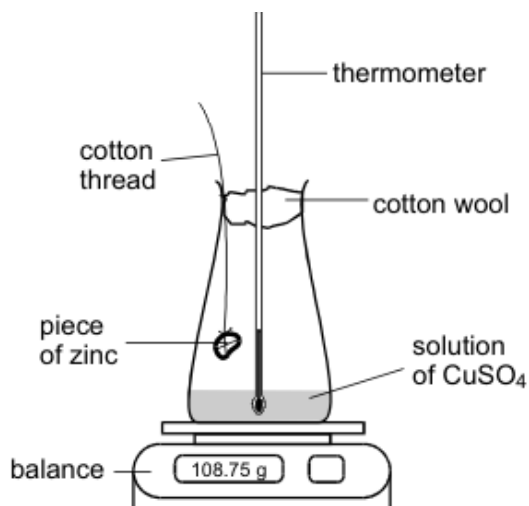
- (c) The concentrations of the solutions are the same.  
Suggest which of the four experiments gives out the most energy.

.....

1 mark

Maximum 4 marks

**Q6.** An experiment was set up as shown in the diagram.



- (a) (i) What is the **name** of the compound,  $\text{CuSO}_4$ , which is dissolved in the water before the start of the experiment?

.....

1 mark

- (ii) Give the **two** products formed by the reaction which occurs when the zinc is lowered into the solution of  $\text{CuSO}_4$ .

1. ....

2. ....

2 marks

- (iii) Give **one** other metallic element which will react in a similar way to zinc.

.....

1 mark

- (b) The flask and contents shown above were weighed and the temperature was noted. The zinc was lowered into the solution and the flask was swirled. After five minutes, the mass and temperature were recorded again.

What change, if any, would there be in the mass of the flask and contents?

.....

1 mark

- (c) The experiment was repeated using a piece of silver instead of zinc.

What change, if any, would you see in the colour of the solution?

.....

1 mark

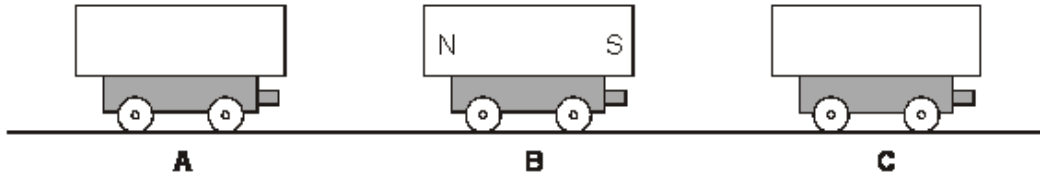
Maximum 6 marks



**Q7.** The diagram below shows three trolleys.  
Peter put a bar magnet on each trolley.

(a) He pushed trolleys A, B and C together.

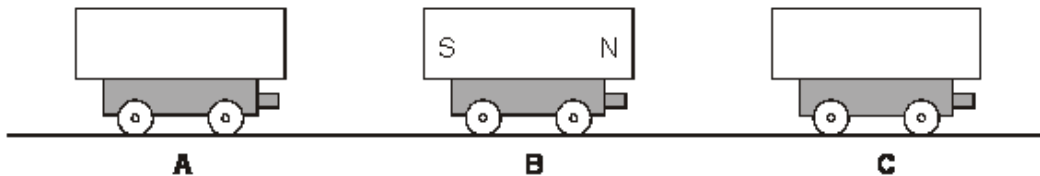
- Magnet B **attracted** magnet A.
- Magnet B **repelled** magnet C.



**On the diagram above,** label the north and south poles of magnets A and C.  
Use the letters N and S.

2 marks

(b) Peter turned trolley B around. Trolleys A and C were **not** turned around.



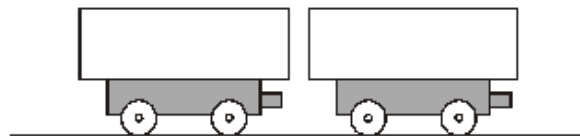
What would happen now when Peter pushed them all together?  
Use either **attract** or **repel** to complete each sentence below.

Magnet B would ..... magnet A.

Magnet B would ..... magnet C.

1 mark

(c) Peter held two trolleys close together and then let go.



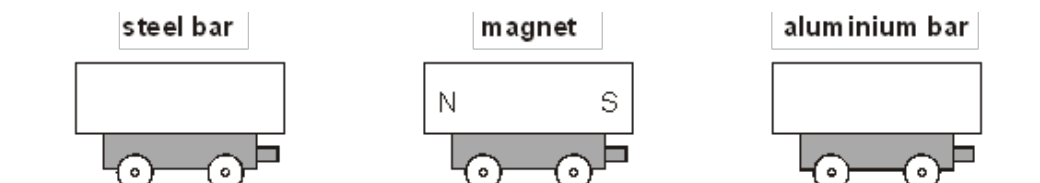
The magnets repelled each other.

**Draw an arrow** on both magnets to show which way they would move.

1 mark

(d) Peter took a magnet, a steel bar and an aluminium bar.

He put them on three trolleys as shown below.



- (i) What happens to the steel bar as he moves it closer to the magnet?

.....

1 mark

- (ii) What happens to the aluminium bar as he moves it closer to the magnet?

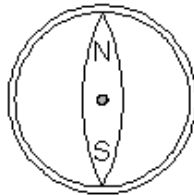
.....

1 mark

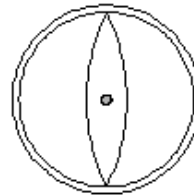
maximum 6 marks

- Q8.** (a) Sam has two small compasses. When he puts them a long way apart, they both point North.

Label the North and South magnetic poles on compass B.



compass A

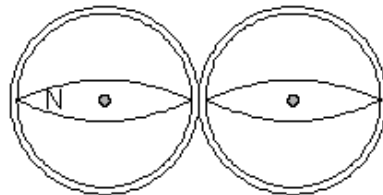


compass B

1 mark

- (b) Sam puts the compasses side by side.

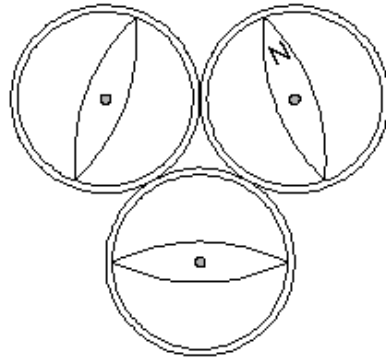
Label the North and South magnetic poles on **both** compasses.  
One pole has been done for you.



1 mark

- (c) Sam then puts three compasses close together.

Label the North and South magnetic poles on each of the **three** compasses.  
One pole has been done for you.



1 mark

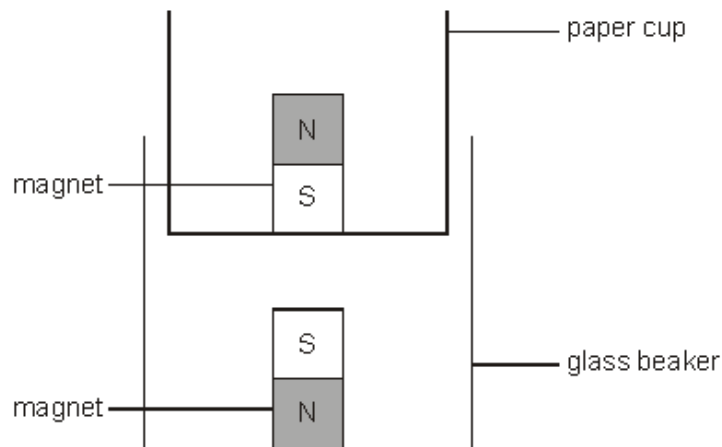
- (d) What metal are compass needles made from?

.....

1 mark

Maximum 4 marks

- Q9.** (a) Debbie put a paper cup into a glass beaker.  
She glued a magnet in the bottom of the paper cup.  
She glued another magnet in the bottom of the beaker.  
The magnets repelled.



**diagram A**

*not to scale*

What **two** forces act on the paper cup and its contents to keep it in this position?

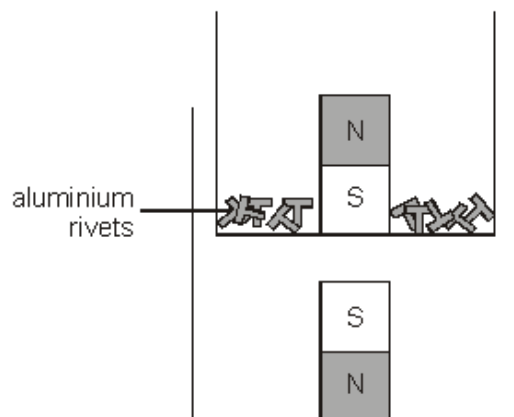
1. ....

1 mark

2. ....

1 mark

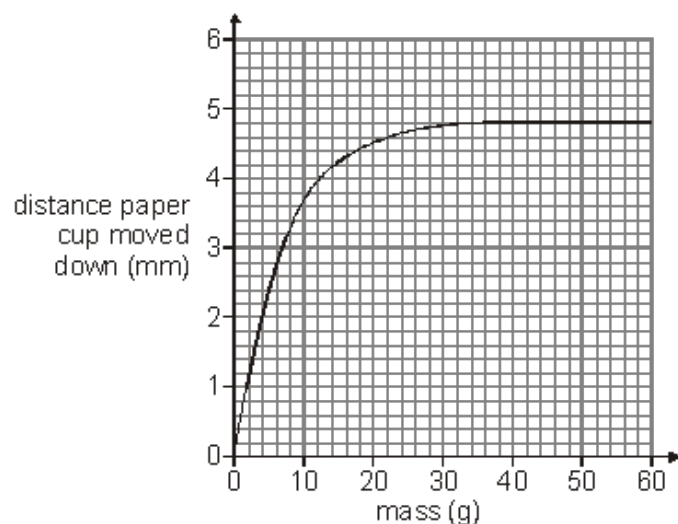
- (b) Debbie put 5 g of aluminium rivets into the paper cup. It moved down a little as shown in diagram B.



**diagram B**

*not to scale*

Debbie plotted a graph to show how the mass of aluminium rivets affected the distance the cup moved down.



- (i) Use the graph to find the mass that made the cup move down 4 mm.

..... g

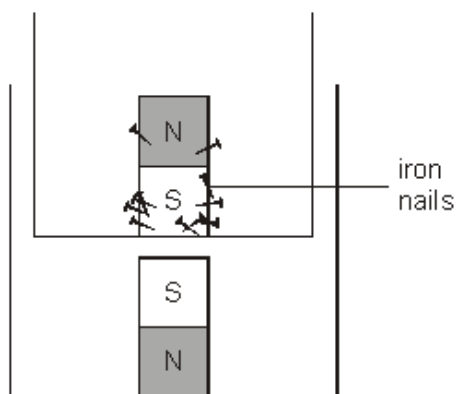
1 mark

- (ii) Why did the graph stay flat with masses greater than 40 g?

.....

1 mark

- (c) Debbie removed the 5 g of aluminium rivets and put 5 g of iron nails into the cup.



**diagram C**

*not to scale*

The paper cup moved down more with 5 g of iron nails than with 5 g of aluminium rivets as shown in diagram C.  
Give the reason for this.

.....

.....

1 mark  
maximum 5 marks

