

(Displacement reactions)

Q1.(2018)

A student investigated the temperature change in displacement reactions between metals and copper sulfate solution.

This is the method used.

1. Measure 50 cm³ of the copper sulfate solution into a polystyrene cup.
2. Record the starting temperature of the copper sulfate solution.
3. Add the metal and stir the solution.
4. Record the highest temperature the mixture reaches.
5. Calculate the temperature increase for the reaction.
6. Repeat steps 1-5 with different metals.

Draw **one** line from each type of variable to the name of the variable in the investigation.

[2 marks]

Type of variable	Name of variable in the investigation
	Concentration of solution
Dependent variable	Particle size of solid
	Temperature change
Independent variable	Type of metal
	Volume of solution

Q2.(2018)

The student used a polystyrene cup and **not** a glass beaker.

Why did this make the investigation more accurate?

[1 mark]

Tick **one** box.

Glass is breakable

☐

Glass is transparent

☐

Polystyrene is a better insulator

☐

Polystyrene is less dense

☐

Q3.a)(2018)

Table 5 shows the student's results.

Table 5

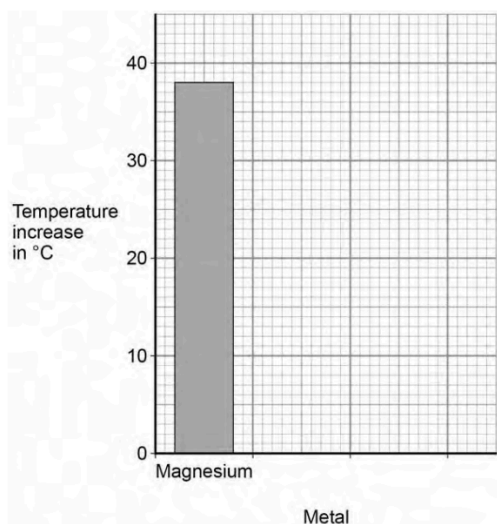
Metal	Temperature increase in °C
Magnesium	38
Nickel	8
Zinc	16

Complete Figure 9.

Use data from Table 5.

[2 marks]

Figure 9



Q3.b)(2018)

The student concluded that the reactions between the metals and copper sulfate solution are endothermic.

Give **one** reason why this conclusion is **not** correct.

[1 mark]

Q3.c)(2018)

The temperature increase depends on the reactivity of the metal.

Write the metals magnesium, nickel and zinc in order of reactivity.

Use **Table 5**.

[1 mark]

Most reactive _____

Least reactive _____

Q3.d)(2018)

Y is an unknown metal.

Describe a method to find the position of **Y** in the reactivity series in Question **06.5**

[3 marks]

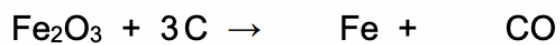
Q4.(2023)

This question is about displacement reactions.

Iron is extracted from iron oxide by a displacement reaction with carbon.

Balance the equation for the reaction.

[2 marks]



Q5.(2023)

Chemical Change

<http://www.pcfgstudy.com>

A student investigated the reactivity of four different metals, **A**, **B**, **C** and **D**.

The student:

- added each metal to aqueous solutions of each of the metal sulfates
- observed whether a reaction took place.

Give **one** observation that would show a reaction took place.

[1 mark]

Q6.(2023)

Table 4 shows the results.

Table 4

Metal	Metal sulfate solution			
	A sulfate	B sulfate	C sulfate	D sulfate
A	×	×	✓	×
B	✓	×	✓	×
C	×	×	×	×
D	✓	✓	✓	×

✓ shows that a displacement reaction took place.

× shows that a displacement reaction did not take place.

Write metals **A**, **B**, **C** and **D** in order of reactivity.

Give a reason for your order of reactivity.

[2 marks]

Most reactive _____

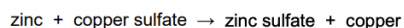
Least reactive _____

Reason _____

Q7. (2024)

Zinc reacts with copper sulfate solution.

The word equation for the reaction is:



What type of reaction is the reaction between zinc and copper sulfate solution?

[1 mark]

Tick (✓) **one** box.

Combustion

☐

Decomposition

☐

Displacement

☐