

Lesson: 4 Metals and Salt Solutions.

Equipment:

Class set of:

Pieces of copper, zinc, iron, magnesium

Dilute Magnesium sulphate, dilute iron sulphate, dilute zinc sulphate, dilute copper sulphate, Spotting tiles, pipettes

Safety:

Safety glasses.

Metals and Salt solutions.

Time:

Noise Level

- Starter

- ☆ True or False

1 All metals react with acids. **False**

2 When metals react with acids they make a salt and hydrogen. **True**

3 Calcium will react with hydrochloric acid to make calcium sulphate and hydrogen. **False**

4 Shiny copper will go dull faster than shiny iron will go dull. **False**

5 Goggles must always be worn when we handle acids. **True**

AMCAN

Explain reactions between metals and salt solutions.

Learning Outcomes

Challenging:

Make relevant observations.

More Challenging:

Identify a pattern in the results.

Most Challenging:

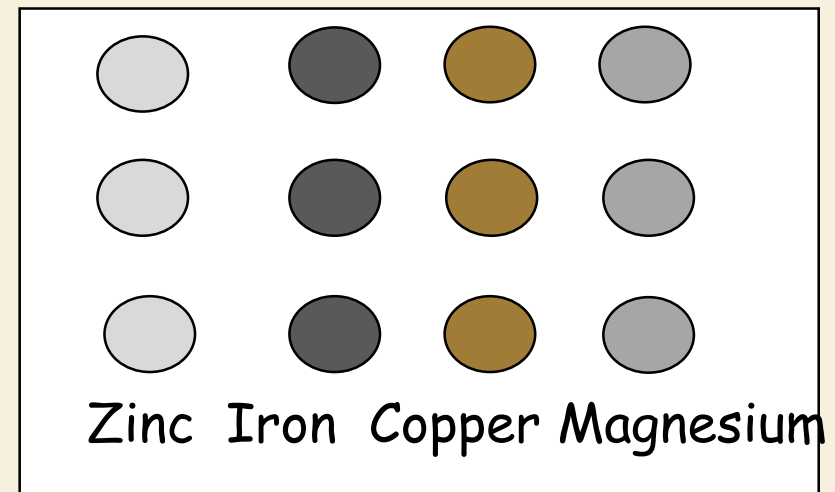
Explain the pattern using the reactivity series.

Experiment: The reaction of metals with salt solutions.

Wear eye protection.

Take a spotting tile and arrange metals as shown in the diagram.
Then take one of the salt solutions.

1. Using a pipette, place a few drops of the salt solution on one piece of each of the metals.
Look for a reaction. What observations are you looking for?
2. Write your observations in your results table.
3. Do the same with each salt solution.



Results

Salt solution	Zinc sulfate	Iron sulfate	Copper sulfate	Magnesium sulfate
Metal				
Zinc				
Iron				
Copper				
Magnesium				

Knowledge check.

Look at your results table.
Can you see a pattern to your results?

Here is a clue:-

Most reactive ----->Least reactive
Magnesium > Zinc > Iron > Copper



These reactions are called **Displacement Reactions**.

What does **Displacement** mean?

One metal takes the place of another.

What is the rule for these reactions?

For the reaction to happen the metal being added must be more reactive than the metal in the salt solution.

Knowledge check.

- 1 Did copper displace zinc from the zinc sulphate?
- 2 Did zinc displace copper from the copper sulphate?
- 2 Which is the more reactive metal, zinc or copper?
- 4 Write a word equation for the reaction that happened.
- 5 Which is the more reactive metal, copper or magnesium?
- 6 Write a word equation for the reaction that showed this.
- 7 Which is the more reactive metal, zinc or magnesium?
- 8 Write a word equation for the reaction that showed this.

Plenary

Time:

Noise Level

- Look at the following reaction:-
- Tin + Silver nitrate \rightarrow Silver + Tin nitrate
- What does this tell you about tin and silver?
- Would this reaction work?
Silver + Tin nitrate \rightarrow
- Explain your answer.