



Reactivity Series

The reactivity series for some common metals is shown below.

Carbon and hydrogen are non-metals but these elements can be used to extract metals, so it is helpful for you to learn where they fit into the reactivity series.

Task 1

Create a mnemonic (silly sentence) to help you learn the reactivity series of metals.

Once you are confident that you have learnt the reactivity series, test yourself with the questions – but no peeking!

	most reactive	p _____
potassium		s _____
sodium		l _____
lithium		c _____
calcium		m _____
magnesium		a _____
aluminium		c _____
carbon		z _____
zinc		i _____
iron		h _____
hydrogen		c _____
copper		g _____
gold		
least reactive		

Task 2

Match up the key words to their definitions. Draw one line from each key word.

ore

A chemical reaction in which a metal loses oxygen. This method is used to extract metals less reactive than carbon.

reduction

The breakdown of a compound using electricity. This method is used to extract metals more reactive than carbon.

electrolysis

A naturally-occurring rock from which a metal can be extracted.

Task 3

Answer the questions about the reactivity series and extraction of metals.

1. Which of these metals is the most reactive?

Tick **one** box.

sodium

zinc

copper

2. Which of these metals is the least reactive?

Tick **one** box.

potassium

magnesium

gold

3. Only metals that are less reactive than carbon can be extracted by reduction with carbon.

Name two metals that can be extracted this way.

1. _____

2. _____

4. A displacement reaction takes place when a more reactive metal displaces (takes the place of) a less reactive metal in a compound.

e.g. magnesium + copper sulfate \longrightarrow magnesium sulfate + copper

Predict the products of the displacement reactions below.

a) calcium + zinc sulfate \longrightarrow _____ + _____

b) sodium + magnesium chloride \longrightarrow _____ + _____

c) magnesium + copper nitrate \longrightarrow _____ + _____



Reactivity Series **Answers**

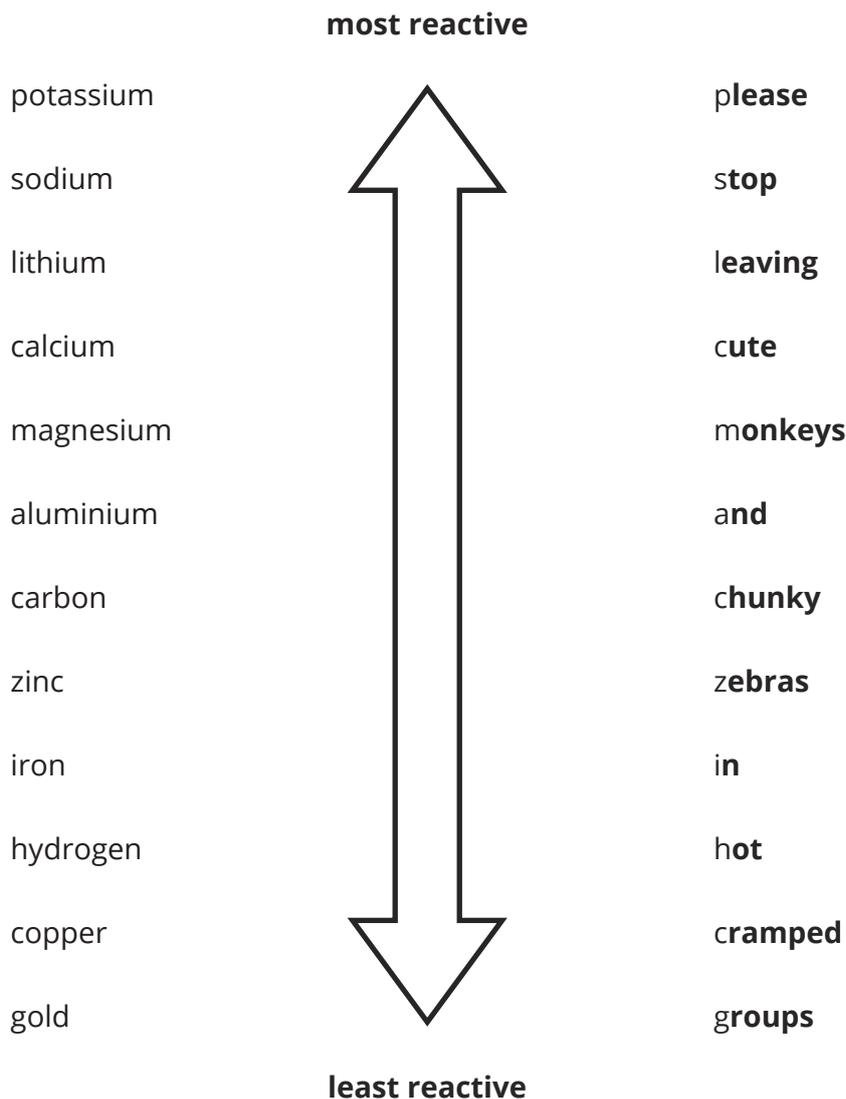
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Carbon and hydrogen are non-metals but these elements can be used to extract metals, so it is helpful for you to learn where they fit into the reactivity series.

Task 1

Create a mnemonic (silly sentence) to help you learn the reactivity series of metals.

Students can make up any silly sentence that helps them remember the reactivity series but an example is shown below.



Task 2

Match up the key words to their definitions. Draw one line from each key word.

ore	A chemical reaction in which a metal loses oxygen. This method is used to extract metals less reactive than carbon.
reduction	The breakdown of a compound using electricity. This method is used to extract metals more reactive than carbon.
electrolysis	A naturally-occurring rock from which a metal can be extracted.

Task 3

Answer the questions about the reactivity series and extraction of metals.

1. Which of these metals is the most reactive?

Tick **one** box.

sodium

zinc

copper

2. Which of these metals is the least reactive?

Tick **one** box.

potassium

magnesium

gold

3. Only metals that are less reactive than carbon can be extracted by reduction with carbon.

Name two metals that can be extracted this way.

Any two from:

- **zinc**
- **iron**
- **copper**

4. A displacement reaction takes place when a more reactive metal displaces (takes the place of) a less reactive metal in a compound.

e.g. magnesium + copper sulfate \longrightarrow magnesium sulfate + copper

Predict the products of the displacement reactions below.

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b) sodium + magnesium chloride \longrightarrow **sodium chloride + magnesium**

c) magnesium + copper nitrate \longrightarrow **magnesium nitrate + copper**