

# Periodic Trends: Electronegativity and Reactivity

Use this worksheet after reading the lesson to practise the key ideas and prove you can meet the success criteria.

Name \_\_\_\_\_

Date \_\_\_\_\_

Class \_\_\_\_\_

## 1. Key Ideas

A lithium battery in your phone relies on lithium being an extremely reactive metal — it gives up electrons readily. The fluorine in non-stick Teflon is there because fluorine is the most electronegative element — it holds onto electrons so tightly that almost nothing can react with it. Reactivity and electronegativity are the chemical "personality" of each element, and they follow perfect periodic trends. Once you understand these trends, you can predict how any element will behave in a chemical reaction — without ever running the experiment.

- Definition and Pauling scale of electronegativity
- How electronegativity connects to atomic radius and  $Z_{\text{eff}}$

## 2. Success Criteria

By the end, you should be able to:

- Definition and Pauling scale of electronegativity
- Trends in electronegativity across periods and down groups
- Trends in metallic/non-metallic reactivity across periods and down groups

## 3. Key Terms

### Key idea

The central concept from Periodic Trends: Electronegativity and Reactivity.

### Evidence

Information, observations or calculations used to support an answer.

### Explain

Give a reasoned answer that links cause and effect.

### Apply

Use a learned idea in a new example, problem or scenario.

## 4. Activity: Build the Lesson Map

Use the lesson to complete the table. Keep answers brief but specific.

Prompt	Your answer
Main concept	
Important example	
Common mistake to avoid	
How this links to the next lesson	

## 5. Short Answer Questions

1. 6. The following observations are recorded in a halogen displacement experiment: Chlorine water added to KBr solution → orange-brown colour develops ( $\text{Br}_2$  formed). Bromine water added to KI solution → purple colour develops ( $\text{I}_2$  formed). Iodine solution added to KCl solution → no colour change. Arrange  $\text{Cl}_2$ ,  $\text{Br}_2$ , and  $\text{I}_2$  in order of decreasing reactivity as oxidising agents, and explain the trend using the periodic table.

BAND 3

4 MARKS

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2. 7. Explain, using electronegativity and bond polarity, why HF is a polar molecule but  $\text{F}_2$  is non-polar. In your answer, include a  $\Delta\chi$  calculation for each bond and describe the charge distribution.

BAND 4

4 MARKS

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## 6. Extend: Apply the Idea

BAND 5/6

5 MARKS

**A student gives a memorised answer about Periodic Trends: Electronegativity and Reactivity but does not use evidence or reasoning.**

Improve the answer by writing a stronger response that uses accurate terminology, a relevant example and a clear explanation.

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## 7. Multiple Choice

1. What is the best first step when answering a question about Periodic Trends: Electronegativity and Reactivity?

- A. Identify the key concept being tested
- B. Write every fact from memory
- C. Ignore the command word
- D. Skip examples and evidence

2. Which answer would show stronger understanding of Periodic Trends: Electronegativity and Reactivity?

- A. An answer with accurate terms and reasoning
- B. A copied definition only
- C. A single-word response
- D. An answer with no example

3. What should you do if a question asks you to explain?

- A. Link the idea to a reason or cause
- B. List unrelated facts
- C. Only draw a diagram
- D. Write the shortest possible answer

## 8. Success Criteria Proof

Finish with evidence that you can do each success criterion.

### SUCCESS CRITERION 1

**Prove that you can: Definition and Pauling scale of electronegativity**

**BAND 3** **2 MARKS**

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### SUCCESS CRITERION 2

**Prove that you can: Trends in electronegativity across periods and down groups**

**BAND 4** **3 MARKS**

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### SUCCESS CRITERION 3

**Prove that you can: Trends in metallic/non-metallic reactivity across periods and down groups**

**BAND 5** **4 MARKS**

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**One thing I still need help with:**

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