

A-Level Chemistry

Name: _____ Score: _____

1. Periodicity means that properties:
 - ☐ only change down a group
 - ☐ never change
 - ☐ repeat in a regular pattern across each period
 - ☐ are random
2. Which Period 3 elements react with water?
 - ☐ silicon and phosphorus
 - ☐ all of them
 - ☐ none of them
 - ☐ sodium (fast) and magnesium (very slowly)
3. Across Period 3, the oxides change from:
 - ☐ all neutral
 - ☐ all basic
 - ☐ acidic to basic
 - ☐ basic (metals) through amphoteric to acidic (non-metals)
4. From its position, what can you predict about a Group 1 element?
 - ☐ it is a reactive metal that forms a +1 ion
 - ☐ it is a non-metal
 - ☐ it forms a -1 ion
 - ☐ it is an unreactive gas
5. Across Period 3, the atomic radius:
 - ☐ decreases, as the rising nuclear charge pulls the same shell inwards
 - ☐ increases
 - ☐ doubles
 - ☐ stays constant
6. Sodium reacts vigorously with water to form sodium hydroxide and _____.

7. Sodium oxide dissolves in water to form an acidic solution.

☐ True ☐ False

8. The same periodic patterns apply to any group or period, not just Period 3.

☐ True ☐ False

9. Across Period 3, atomic radius increases.

☐ True ☐ False

10. Across a period, elements change from metallic to _____.

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1. **repeat in a regular pattern across each period**

Periodicity is the repeating pattern of properties across the periods of the table.

2. **sodium (fast) and magnesium (very slowly)**

Only Na and Mg react with water; sodium reacts fast, magnesium only very slowly with cold water.

3. **basic (metals) through amphoteric to acidic (non-metals)**

Metal oxides on the left are basic; non-metal oxides on the right are acidic; Al_2O_3 is amphoteric in between.

4. **it is a reactive metal that forms a +1 ion**

Group 1 elements are reactive metals with one outer electron, forming +1 ions.

5. **decreases, as the rising nuclear charge pulls the same shell inwards**

More protons pull the outer shell in more strongly, while shielding stays about the same.

6. **hydrogen**7. **False**

False. Sodium oxide is a basic metal oxide; it reacts with water to form sodium hydroxide, an alkaline solution. Non-metal oxides tend to be acidic.

8. **True**

Periodicity is general – once you know the trends, they apply across the whole table.

9. **False**

False. Atomic radius decreases across Period 3: nuclear charge rises while shielding stays similar, so electrons are pulled closer.

10. **non-metallic**

Metallic character decreases across a period.