What Are Periods and Groups?

Worksheet

A period is a horizontal row of elements in the periodic table; a group is a vertical column. Elements in the same group have identical valence electrons and show similar chemistry; period number indicates the number of electron shells.

Questions

1. If an element is in Period 5, how many electron shells does it have?

A) 3
B) 4
C) 5
D) 6

2. Elements in Group 18 are known as

A) alkali metals
B) halogens
C) transition metals
D) noble gases

3. Bromine (Br) is in Group 17. How many valence electrons does it have?

A) 5
B) 6
C) 7
D) 8

4. Comparing sodium (Na, Period 3) and potassium (K, Period 4): which is more reactive?

A) Na
B) K
C) Same
D) Depends on conditions

5. Iron (Fe) is in Period 3, Group 8. How many electron shells does Fe have?

6. Chlorine is in Group 17. How many valence electrons does Cl have?

7. Sodium (Na) is in Period 3, Group 1. Describe its reactivity.

8. Define: How do you identify the period of an element?

9. Define: How do you identify the group of an element?

10. Define: Why do Group 1 elements behave alike?

Answer Key

1. C) 5 - Period number directly equals the number of electron shells; Period 5 = 5 shells.
2. D) noble gases - Group 18 holds the noble gases with full valence shells (8 electrons, inert).
3. C) 7 - All Group 17 elements have 7 valence electrons (halogens, highly reactive nonmetals).
4. B) K - K is more reactive because it's lower in the group (larger, easier to lose its valence electron).
5. Period number = number of electron shells Period 3 means Fe has 3 electron shells Answer: 3 shells
6. Group 17 elements all have 7 valence electrons Chlorine is in Group 17, so Cl has 7 valence electrons
7. Group 1 = alkali metals, very reactive Na readily loses its single valence electron to form Na+ Answer: Highly reactive
8. Find the element's row number (1-7) - it equals the number of electron shells.
9. Find the element's column number (1-18) - elements in the same group have the same number of valence electrons.
10. All Group 1 elements (alkali metals) have 1 valence electron, making them highly reactive.