What's the Difference Between Cations and Anions?

Worksheet

Cations are positively charged ions (lost electrons), anions are negatively charged ions (gained electrons). Cations are named with '+' suffix, anions with '-' (e.g., Na, Cl).

Questions

1. Which type of ion has more protons than electrons?

A) Anion
B) Cation
C) Both equally
D) Neither

2. Which forms a cation: a metal or non-metal?

A) Non-metal
B) Metal
C) Both equally
D) Depends on the element

3. If S gains 2 electrons (35 protons), what is the charge?

A) +2
B) 2
C) +35
D) Neutral

4. What is the charge on Al?

A) +1
B) +2
C) +3
D) 3

5. Sodium (Na) has 11 protons and 12 electrons. Is it a cation or anion? Write its formula.

6. Chlorine (Cl, 17 protons) gains 1 electron. Name the resulting ion.

7. Magnesium (Mg, 12 protons) loses 2 electrons. What ion forms?

8. Define: What is a cation?

9. Define: What is an anion?

10. Define: Does a cation have more protons or electrons?

Answer Key

1. B) Cation - Cations have more protons (lost electrons); anions have more electrons.
2. B) Metal - Metals typically lose electrons to form cations (e.g., Na, Ca).
3. B) 2 - Gaining 2 electrons = 2 charge. Ion is S (sulfide anion).
4. C) +3 - Al lost 3 electrons, giving it a +3 charge.
5. 11 protons (atomic number) 12 electrons given 12 > 11 gained 1 electron Gained electrons anion Formula: Na
6. 17 protons + 1 electron gained = 18 electrons 18 > 17 gained electrons Result: Cl (chloride anion, charge 1)
7. 12 protons, loses 2 electrons 12 protons, 10 electrons remain 10 < 12 lost electrons Result: Mg (magnesium cation, charge +2)
8. A positively charged ion formed when an atom loses electrons.
9. A negatively charged ion formed when an atom gains electrons.
10. More protons (fewer electrons). Lost electrons = positive charge.