

Chapter 3 Reader's Guide #1-21

3.8

1. The letters in each box of the periodic table are the **symbol** for that element.
2. The integer in each box of the periodic table is the **atomic number** of that element.
3. The elements are ordered according to atomic number.
4. Dmitri Mendeleev, from Russia, first organized the periodic table.
5. He arranged them that way because of similarities in the chemical properties.
6. It refers to the fact that every so often an element occurs that is similar to an earlier element.
7. A family of elements is arranged in columns.
8.
 - a) Alkali metals - Li, Na, K, Rb, Cs, Fr
 - b) Alkaline earth metals - Be, Mg, Ca, Sr, Ba, Ra
 - c) Halogens - F, Cl, Br, I, At
 - d) Noble gases - He, Ne, Ar, Kr, Xe, Rn
9. Groups 3-12 are called the transition metals.
10. Most of the elements are metals.
11. Metals are efficient conductors of heat & electricity, malleable, ductile, and lustrous.
12. The metals are located on the left of the stair-step line.
13. Non-metals are located to the right of the stair-step line.
14. Elements close to the stair-step line are called metalloids/semimetals.

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15. We don't often find elements in their pure states.
16. They are found in relatively pure form because they are noble metals, unreactive.
17. The noble gases are: Helium, Neon, Argon, Krypton, Xenon, and Radon.
18. Diatomic molecules are molecules made up of two atoms.
19. The seven elements that form diatomic molecules are: H, N, O, F, Cl, Br, I.
20. Allotropes are different forms of an element.
21. Three allotropes of carbon are: diamonds, graphite, and buckminsterfullerene.

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22. An atom is neutral, meaning that it has 0 net charge.
23. An ion is formed by removing or adding electron(s) to a neutral atom.
24. A cation is a positive ion and is formed when a neutral atom loses electron(s).
25. A cation is named using the name of the parent atom (Ex: sodium cation).
26. An anion is a negative ion and is formed by adding electron(s) to a neutral atom.

27. When naming anions, you take the name of the atom and add the suffix "ide"

28. Ions are never formed by changing the number of protons in the nucleus

29. Usually, isolated atoms do not form anions; ions usually form when metallic elements combine with nonmetal elements

30. a) alkali metals: $1+$

b) alkaline-earth metals: $2+$

c) halogens: $1-$

31. There is no easy way to predict the charge of the cations formed by transition metals.

32. Metals tend to form positive ions, which means they tend to lose electrons. Nonmetals tend to form negative ions, which means they tend to gain electrons.

33. Table salt melts at 800°C

34. We can explain the properties of sodium chloride by electrolysis.

35. An electric current can travel along a metal wire because electrons are free to move through the wire.

36. Substances that contain ions can conduct electric current only if the ions can move.

37. Solid NaCl can't conduct a current because the ions cannot move.

38. The net charge on a chemical compound is 0.