

Conceptual Biology**Chapter 2: The Chemistry of Life***Types of Chemical Bonds*

1. Based upon their positions in the periodic table, predict whether each pair of elements will form an ionic, covalent, or metallic bond (See also Section 18.3 of the textbook)
- a. Gold (79) and Platinum (78) _____ b. Rubidium (37) and Iodine (53) _____
c. Sulfur (16) and Chlorine (17) _____ d. Sulfur (16) and Magnesium (12) _____
e. Calcium (20) and Chlorine (17) _____ f. Germanium(32) and Arsenic (33) _____
g. Iron (26) and Chromium (24) _____ h. Chlorine (17) and Iodine (53) _____
i. Carbon (6) and Bromine (35) _____ j. Barium (56) and Astatine (85) _____
2. The most common ions of lithium, magnesium, aluminum, chlorine, oxygen, and nitrogen and their respective charges are as follows:

Positively Charged Ions

Lithium ion: Li^{1+}
Barium ion: Ba^{2+}
Aluminum ion: Al^{3+}

Negatively Charged Ions

Chloride ion: Cl^{1-}
Oxide ion: O^{2-}
Nitride ion: N^{3-}

Use this information to predict the chemical formulas for the following ionic compounds:

- a. Lithium Chloride: _____ b. Barium Chloride: _____ c. Aluminum Chloride: _____
d. Lithium Oxide: _____ e. Barium Oxide: _____ f. Aluminum Oxide: _____
g. Lithium Nitride: _____ h. Barium Nitride: _____ i. Aluminum Nitride: _____
- j. How are elements that form positive ions grouped in the periodic table relative to elements that form negative ions? _____
3. Predict whether the following chemical structures are polar or nonpolar:

