1 **H** Hydrogen 1							2 **He** Helium 4
3 **Li** Lithium 7	4 **Be** Beryllium 9	5 **B** Boron 11	6 **C** Carbon 12	7 **N** Nitrogen 14	8 **O** Oxygen 16	9 **F** Fluorine 19	10 **Ne** Neon 20
11 **Na** Sodium 23	12 **Mg** Magnesium 24	13 **Al** Aluminum 27	14 **Si** Silicon 28	15 **P** Phosphorus 31	16 **S** Sulfur 32	17 **Cl** Chlorine 35	18 **Ar** Argon 40

1. What is the boldfaced letter or letters in the center of the box?

_____

2. What is the number above a boldfaced letter or letters? _____

_____

3. What is the number below the name of an element? _____

_____

Element	Number of Protons in Atom	Number of Neutrons in Atom	Number of Electrons in Atom	Number of Electrons in First Energy Level	Number of Electrons in Second Energy Level	Number of Electrons in Third Energy Level
Carbon						
Chlorine						
Helium						
Hydrogen						
Lithium						
Magnesium						
Neon						
Nitrogen						
Oxygen						
Phosphorus						
Sodium						
Sulfur						

CHAPTER

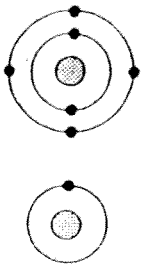
4 Basic Chemistry

Science Skills

Drawing Diagrams of Chemical Reactions

All living things are made of cells, and all cells are composed of thousands of different kinds of chemical compounds. Determining the structure of compounds often requires knowledge of the electron structure of their atoms.

A. Study the diagrams below that show the electron structures of carbon and hydrogen atoms. Complete the diagram by showing how four hydrogen atoms combine with one carbon atom. Then show the electron structure of the resulting molecule.



carbon and hydrogen

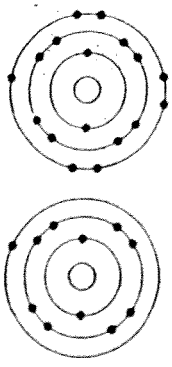
1. Show how the electrons are shared here.

2. Show the resulting molecule here.

3. What kind of chemical bonding is shown in the third diagram? _____

4. How are these bonds formed? _____

B. In the spaces below, show how one atom of sodium combines with one atom of chlorine.



sodium and chlorine

1. Show how the electrons are transferred here.

2. Show the resulting molecule here.

3. What kind of chemical bonding is shown in the third diagram? _____

4. How are the atoms bonded together? _____