

**CHAPTER 7 THE CHEMISTRY OF LIFE**

**Get the Big Picture**

Read what's in the boxes and study the pictures. Then fill in the blanks in the statements below.

**Atom**

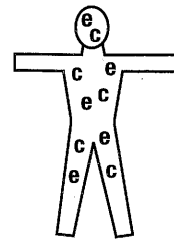
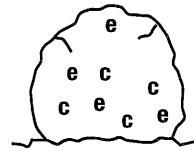
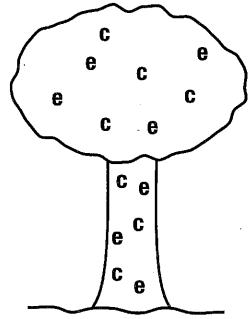
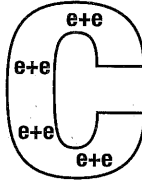
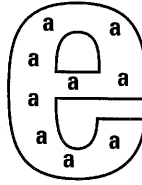
- smallest particle of an element
- contains protons, neutrons, and electrons

**Element**

- made of atoms
- cannot be broken down into simpler substances
- hydrogen and oxygen are elements

**Compound**

- made up of chemically combined elements
- water is a compound, made up of hydrogen and oxygen



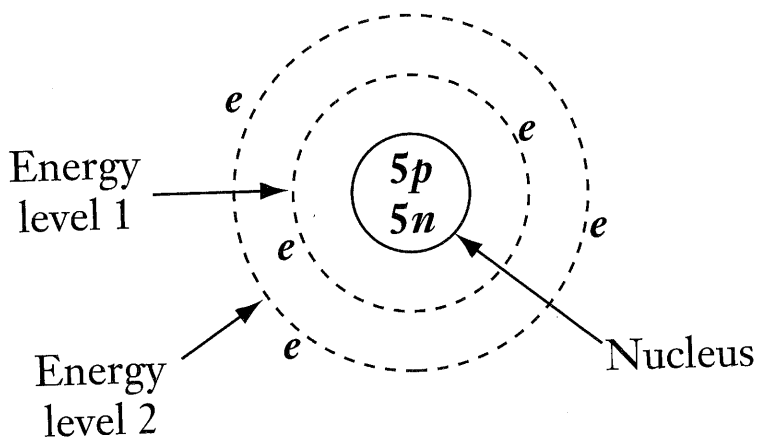
1. Elements are made up of \_\_\_\_\_.
2. Inside the atoms are \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.
3. Elements combine to form \_\_\_\_\_.
4. All living and nonliving things are made up of \_\_\_\_\_ and \_\_\_\_\_.

**CHAPTER 7 THE CHEMISTRY OF LIFE**

**Section 7.1 Elements and Atoms**  
**Section 7.2 Interactions of Matter**  
**Section 7.3 Life Substances**  
**Study the Diagram**

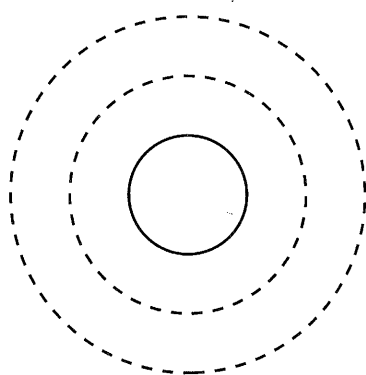
Use the diagram to answer the questions.

**Boron Atom**



1. An atom of boron contains \_\_\_\_\_ protons, \_\_\_\_\_ neutrons, and \_\_\_\_\_ electrons.
2. An oxygen atom contains 8 protons and 8 neutrons. It has 2 electrons in its first energy level. It has 6 electrons in its second energy level. In the space below, draw an atom of oxygen. Be sure to show the protons, neutrons, electron energy levels, and electrons.

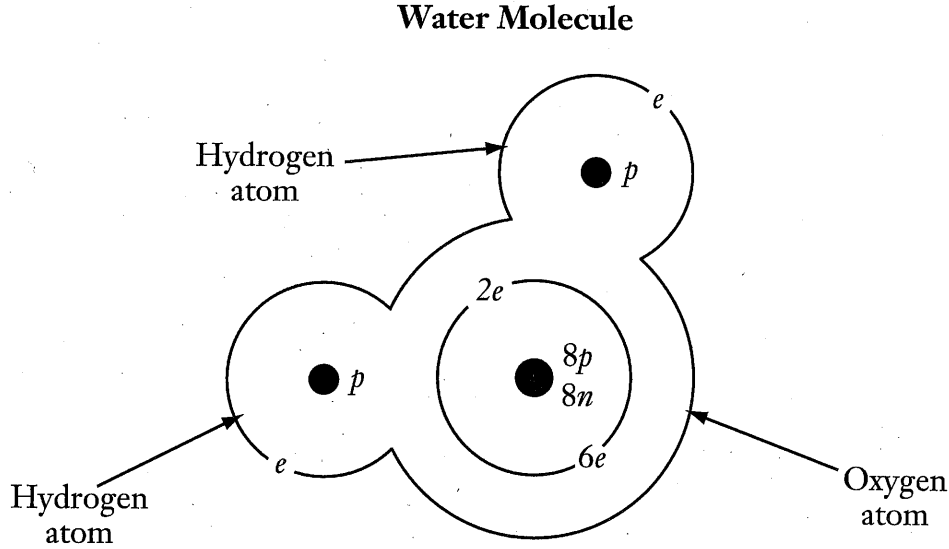
**Oxygen Atom**



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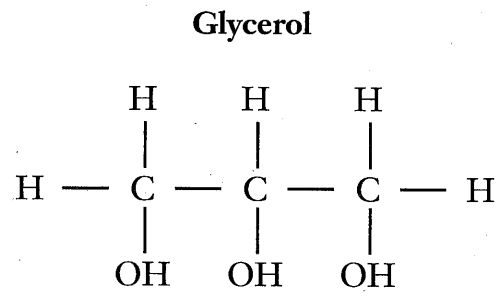
**Study the Diagram**

Use the diagram to answer the questions.



3. How many electrons does a water molecule have? \_\_\_\_\_
4. How many protons does a water molecule have? \_\_\_\_\_
5. Each hydrogen atom shares \_\_\_\_\_ electron(s) with the oxygen atom.

Use the diagram to answer the questions.



6. How many bonds can each carbon atom (C) form? \_\_\_\_\_
7. With the carbon atoms bonded end-to-end with each other, what does this molecule look like?  
\_\_\_\_\_

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**Review the Key Terms**

Some of the Chapter 7 key terms are listed below. Review the definitions of these words. Then use the clues to complete the puzzle. The letters in the dark boxes will make up three words that tell you what you are studying in Chapter 7.

- base
- carbohydrate (car boh HI drayt)
- cellulose (SEL yew lohS) protein
- disaccharide (di SAK uh ride)
- enzyme
- hydrogen bond
- metabolism (muh TAB uh lihZ um)
- nucleic acid
- polar molecule
- polymer
- protein
- solution
- starch

1. polymer of glucose found in the cell walls of plants
2. compound used by cells to store and release energy
3. substance that forms hydroxide ions in water
4. all the chemical reactions that occur in an organism
5. mixture in which a substance dissolves into another substance
6. two simple sugars linked together
7. chains of glucose used to store food in plants
8. molecule with a positive end and a negative end
9. weak bond formed between hydrogen and other atoms
10. polymer made of amino acids that is essential to all life
11. large molecule made of many smaller molecules bonded together
12. large molecule that stores information in cells
13. protein that speeds up a chemical reaction