

Chemistry in Biology

Before You Read

Before you read the chapter, respond to these statements.

1. Write an **A** if you agree with the statement.
2. Write a **D** if you disagree with the statement.

Before You Read	Chemistry in Biology	After You Read
	<ul style="list-style-type: none"> • Atoms are the smallest particles in matter. 	
	<ul style="list-style-type: none"> • Chemical reactions occur constantly inside your body. 	
	<ul style="list-style-type: none"> • About 70 percent of your body is water. 	
	<ul style="list-style-type: none"> • Almost all molecules in living things contain the element carbon. 	

Science Journal

Consider the characteristics of a living and a nonliving thing. Describe a few ways that the two are alike and a few ways that the two are different.

Chemistry in Biology

Section 1 Atoms, Elements, and Compounds

Main Idea _____ **Details** _____

Scan the headings and boldfaced words in Section 1 of the chapter. Predict two things that you think might be discussed.

1. _____
2. _____

Review Vocabulary

Use your book or dictionary to define substance.

substance

New Vocabulary

Compare the terms in the table by defining them.

atom
electron
neutron
nucleus
proton

compound
covalent bond

element

ion

ionic bond

isotope

molecule

van der Waals force

Atom		
Nucleus		Electron
Proton	Neutron	

Complete the paragraph below using the terms listed to the left.

A substance that cannot be broken down into other substances is a(n) _____. Carbon-14 is a(n) _____. It has a different number of neutrons than other carbon atoms. A(n) _____ forms when two or more elements combine. The chemical bond that holds the elements together is a(n) _____ when electrons are shared. A substance with this kind of bond is called a(n) _____. An atom that has lost or gained one or more electrons becomes a(n) _____, which carries an electric charge. Two of these oppositely charged atoms can form an electrical attraction called a(n) _____. An attraction between oppositely charged regions of molecules is called a(n) _____.

Section 1 Atoms, Elements, and Compounds (continued)

Main Idea _____

Details _____

Atoms

I found this information on page _____.

Model an oxygen atom and label the parts. Note the type of electric charge for each part. Then complete the sentence that follows.

The overall charge of the oxygen atom is _____, because the atom _____.

Elements

I found this information on page _____.

Compare and contrast the characteristics of carbon-14 by completing the following sentences.

Structurally, carbon-14 differs from other carbon atoms because _____.

Carbon-14 is radioactive because _____.

Knowing the half-life of carbon-14 enables scientists to _____.

Compounds

I found this information on page _____.

Identify four unique characteristics of compounds.



Section 1 Atoms, Elements, and Compounds (continued)

Main Idea

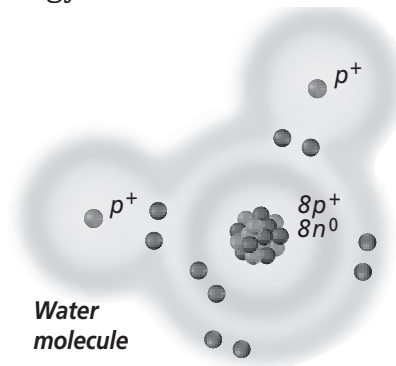
Details

Chemical Bonds

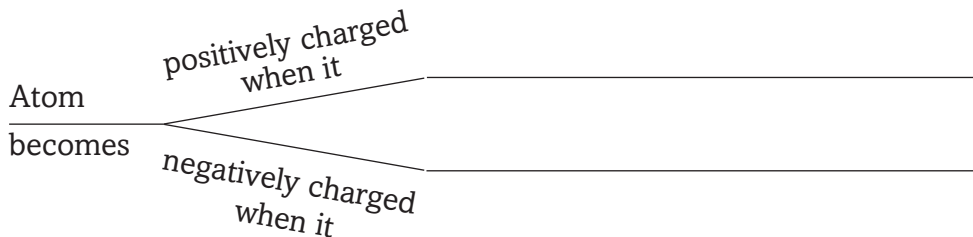
I found this information on page _____.

Label the following parts of the water molecule illustrated below.

- hydrogen atom(s)
- oxygen atom(s)
- covalent bonds
- first energy level
- second energy level



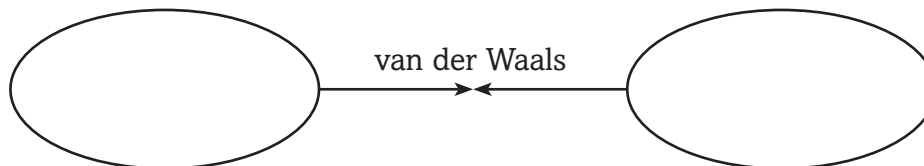
Compare positively and negatively charged ions.



van der Waals Forces

I found this information on page _____.

Identify the positive and negative regions of these two molecules to show these van der Waals forces.



CONNECT

A chemical compound in your toothpaste helps protect your teeth from decay. The formula for this compound is $\text{Na}_2\text{PO}_3\text{F}$. Use the periodic table in your book to identify each element in this compound.