

**Chapter 2 Minerals**

**Section 2.1 Matter**

*This section discusses the relationship between minerals and elements. It explains the parts of an atom and defines ions, isotopes, compounds, and chemical bonds.*

**Reading Strategy**

**Comparing and Contrasting** As you read, complete the organizer to compare and contrast protons, neutrons, and electrons. For more information on this Reading Strategy, see the **Reading and Study Skills** in the **Skills and Reference Handbook** at the end of your textbook.

Protons	Electrons	Neutrons
Differences		
Similarities		

**Elements and the Periodic Table**

- ➡ A substance that cannot be broken down into simpler substances by chemical or physical means is called a(n) \_\_\_\_\_.
- The document in which elements are organized by their properties is known as the \_\_\_\_\_.
- Circle the letter of the name for the columns within the periodic table.
 

a. periods	b. groups
c. metals	d. compounds

**Atoms**

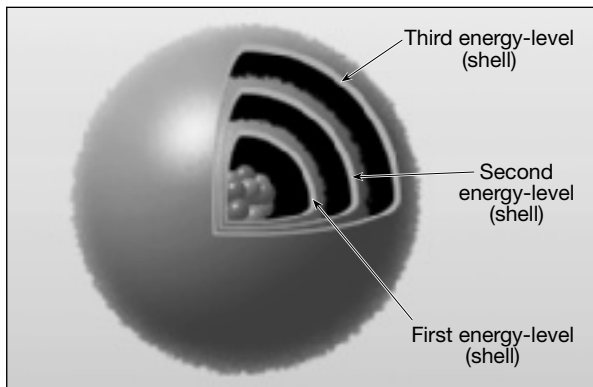
- ➡ What is an atom? \_\_\_\_\_  
\_\_\_\_\_
- The atomic number of boron is 5. What does this tell you about an atom of boron?  
\_\_\_\_\_  
\_\_\_\_\_

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6. Name the three main types of particles in an atom.

\_\_\_\_\_

7. Indicate where each type of particle is located in an atom by placing the first letter of each name on the diagram.



8. From which energy level in the diagram would atomic particles be transferred to form a compound? \_\_\_\_\_

### Isotopes

9.  Is the following sentence true or false? Isotopes of carbon have the same number of neutrons and different numbers of protons.

\_\_\_\_\_

10. Is the following sentence true or false? The total mass of an atom of nitrogen is known as the atom's mass number. \_\_\_\_\_

### Why Atoms Bond

11.  What does a compound consist of? \_\_\_\_\_

\_\_\_\_\_

12.  What is likely to happen to an atom of oxygen that does not contain the maximum number of electrons in its outermost energy level? \_\_\_\_\_

\_\_\_\_\_

### Types of Chemical Bonds

Match each description with its type of chemical bond.

Description	Chemical Bond
_____ 13. <input type="radio"/> when one metal ion shares electrons with another metal ion	a. covalent b. ionic c. metallic
_____ 14. <input type="radio"/> when a positive ion is attracted to a negative ion	
_____ 15. <input type="radio"/> when one atom shares electrons with another atom	