Section: Organizing the Elements

1. Write the chemical symbol for each of the following elements:
   a. manganese  
   b. lead  
   c. carbon  
   d. uranium  
   e. radon  
   f. silver

2. Indicate whether each statement can be used to describe rows in the periodic table, columns in the periodic table, or both.
   a. Atomic mass increases.  
   b. Atomic number increases.  
   c. Chemical properties are similar.  
   d. Conductivity changes.

3. Describe what Mendeleev found when he organized the elements by atomic mass.

4. Explain why Mendeleev had to reverse the order of some of the elements in his periodic table, and describe the effect this had on the modern periodic table.

5. Describe how rows and columns in the modern periodic table are organized.

Section: Families of Elements

2. Analyze the following pairs of elements, and determine whether each pair has similar or different reactivities.
   a. potassium, K, and rubidium, Rb  
   b. calcium, Ca, and barium, Ba  
   c. sodium, Na, and chlorine, Cl  
   d. helium, He, and krypton, Kr

3. Classify each of the following elements as an alkali metal, alkaline-earth metal, transition metal, or semiconductor based on its position in the periodic table.
   a. rubidium, Rb  
   b. silicon, Si  
   c. silver, Ag  
   d. barium, Ba

4. Classify each of the following elements as a halogen, noble gas, or other nonmetal based on its position in the periodic table.
   a. carbon, C  
   b. chlorine, Cl  
   c. radon, Rn  
   d. phosphorus, P

5. Explain why chlorine, Cl, is very reactive, whereas argon, Ar, is unreactive.
**CHAPTER 5 REVIEW**

The Periodic Law

**SECTION 5-2**

**SHORT ANSWER** Answer the following questions in the space provided.

Use only this periodic table to answer the following questions.

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1. Identify the element and write the noble-gas notation for each of the following:
   a. the Group 14 element in Period 4
   b. the only metal in Group 15
   c. the transition metal with the smallest atomic mass
   d. the alkali earth metal with the largest atomic number

**Definitions**

1. An arrangement of elements in columns based on a set of properties that repeat from row to row
2. A pattern of repeating properties that occurs when atomic numbers are used to arrange elements into groups
3. One-twelfth the mass of a carbon-12 atom
4. Elements that are good conductors of heat and electric current
5. Elements that form a bridge between the elements on the left and right sides of the periodic table
6. Elements that are poor conductors of heat and electric current
7. Elements with properties that fall between those of metals and nonmetals
8. An electron that is in the highest occupied energy level of an atom
9. Colorless, odorless, and extremely unreactive gases

**Physical Science Reading and Study Workbook Level B** • Chapter 5