

**CHAPTER 5 REVIEW***The Periodic Law***SECTION 5-1****SHORT ANSWER** Answer the following questions in the space provided.

- \_\_\_\_\_ In the modern periodic table, elements are ordered \_\_\_\_\_.
  - according to decreasing atomic mass
  - according to Mendeleev's original design
  - according to increasing atomic number
  - based on when they were discovered
- \_\_\_\_\_ Mendeleev noticed that properties of elements appeared at regular intervals when the elements were arranged in order of increasing \_\_\_\_\_.
  - density
  - reactivity
  - atomic number
  - atomic mass
- \_\_\_\_\_ The modern periodic law states that \_\_\_\_\_.
  - no two electrons with the same spin can be found in the same place in an atom
  - the physical and chemical properties of the elements are functions of their atomic number
  - electrons exhibit properties of both particles and waves
  - the chemical properties of elements can be grouped according to periodicity, but physical properties cannot
- \_\_\_\_\_ The discovery of the noble gases changed Mendeleev's periodic table by adding a new \_\_\_\_\_.
  - period
  - series
  - group
  - sublevel block
- \_\_\_\_\_ The most distinctive property of the noble gases is that they are \_\_\_\_\_.
  - metallic
  - radioactive
  - metalloids
  - largely unreactive
- \_\_\_\_\_ Lithium, the first element in Group 1, has an atomic number of 3. The second element in this group has an atomic number of \_\_\_\_\_.
  - 4
  - 10
  - 11
  - 18
- An isotope of fluorine has a mass number of 19 and an atomic number of 9.
  - How many protons are in this atom?  
\_\_\_\_\_
  - How many neutrons are in this atom?  
\_\_\_\_\_
  - What is the symbol of this fluorine atom including its mass number and atomic number?  
\_\_\_\_\_

**SECTION 5-1 continued**

**8.** Samarium, Sm, is a member of the lanthanide series.

- \_\_\_\_\_ **a.** Identify the element just below samarium in the periodic table.  
\_\_\_\_\_ **b.** The atomic numbers of these two elements differ by how many units?

**9.** A certain isotope contains 53 protons, 78 neutrons, and 54 electrons.

- \_\_\_\_\_ **a.** What is its atomic number?  
\_\_\_\_\_ **b.** What is the mass of this atom in amu (to the nearest whole number)?  
\_\_\_\_\_ **c.** Is this element Pt, Xe, I, or Bh?  
\_\_\_\_\_ **d.** Identify two other elements that are in its group.

**10.** In a modern periodic table, every element is a member of both a horizontal row and a vertical column. Which one is the group, and which one is the period?

\_\_\_\_\_  
\_\_\_\_\_

**11.** Explain the distinction between atomic mass and atomic number.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**12.** In the periodic table, the atomic masses of Te and I decrease rather than increase, while their atomic numbers increase. This phenomenon happens to other neighboring elements in the periodic table. Name two of these sets of elements.

\_\_\_\_\_  
\_\_\_\_\_