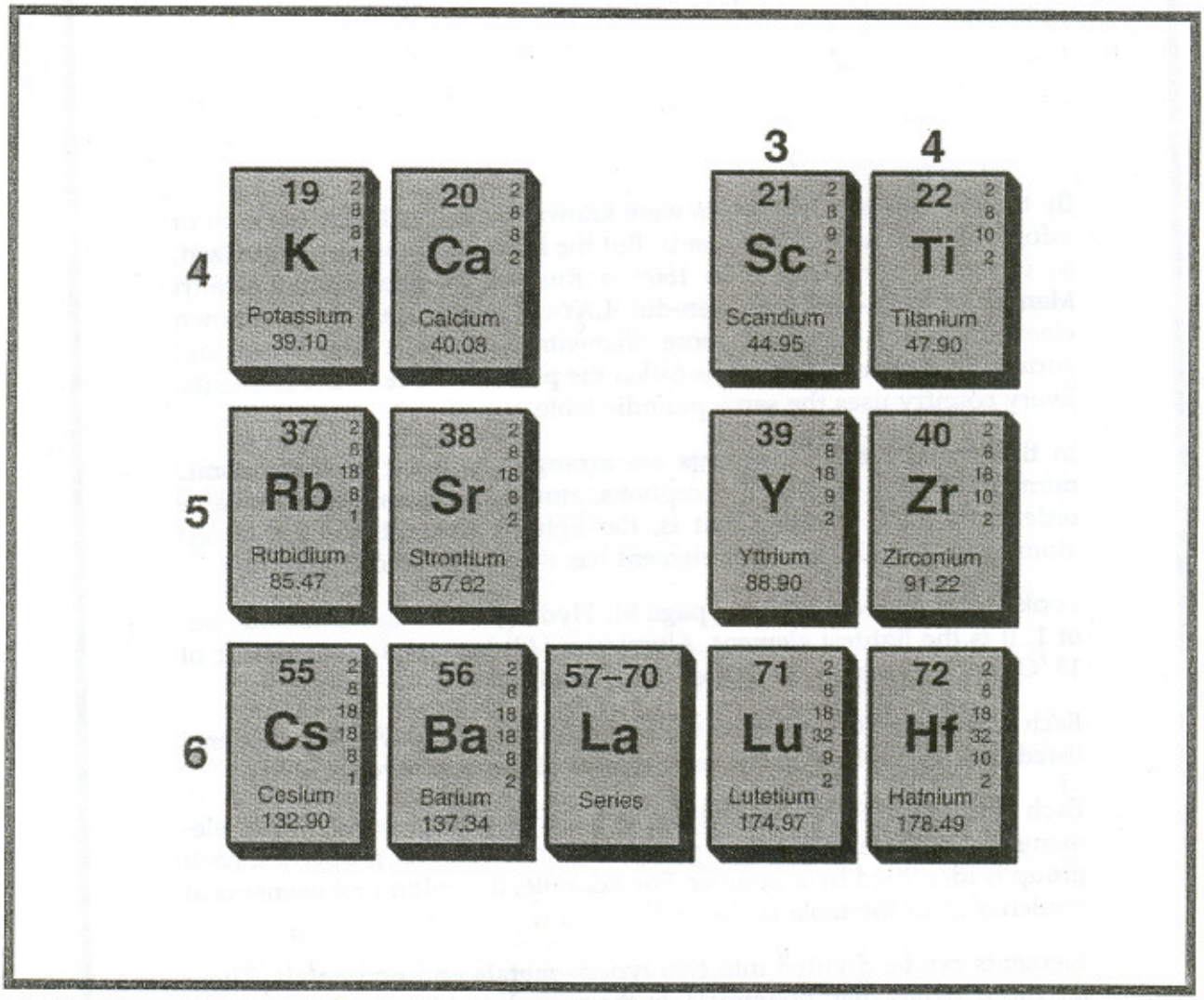
Lesson 14

What is the periodic table of elements?



KEY TERMS

periodic table: a chart of all known elements

period: a row across the periodic table

group: a column, or family, in the periodic table

metals: elements found on the left side of the periodic table, which share properties

nonmetals: elements found on the right side of the periodic table

LESSON 14 | What is the periodic table of elements?

By the mid-1800s, 60 elements were known. Scientists had quite a bit of information about these elements. But the information wasn't organized, so it wasn't very useful. In 1869, a Russian scientist named Dmitri Mendeleev [duh-MEE-tree men-duh-LAY-uf] made a chart of the known elements. Since that time more elements have been discovered and added to the chart. The chart is called the **periodic table of the elements**. Every country uses the same periodic table.

In the periodic table, elements are arranged in order of their atomic numbers. With a couple of exceptions, atomic numbers are in the same order as atomic masses. That is, the lightest element has the lowest atomic number; the heaviest element has the highest atomic number.

Look at the periodic table on page 81. Hydrogen has an atomic number of 1. It is the lightest element. Aluminum (Al) has an atomic number of 13. Only 12 elements are lighter than aluminum.

Each row across the periodic table is called a **period**. All the elements listed in a row belong to the same period. There are seven periods.

Each column in the periodic table is called a **group**, or family, of elements. All of the elements in a group have many similar properties. Each group is identified by a number. For example, the column of elements at the left side of the table is Group 1.

Elements can be divided into two types—**metals** and **nonmetals**. There are more metals than nonmetals. In the periodic table, metals are on the left, nonmetals are on the right. A heavy, step-like line separates the metals from the nonmetals. Hydrogen is in two places in the periodic table because it can act as a metal or a nonmetal.

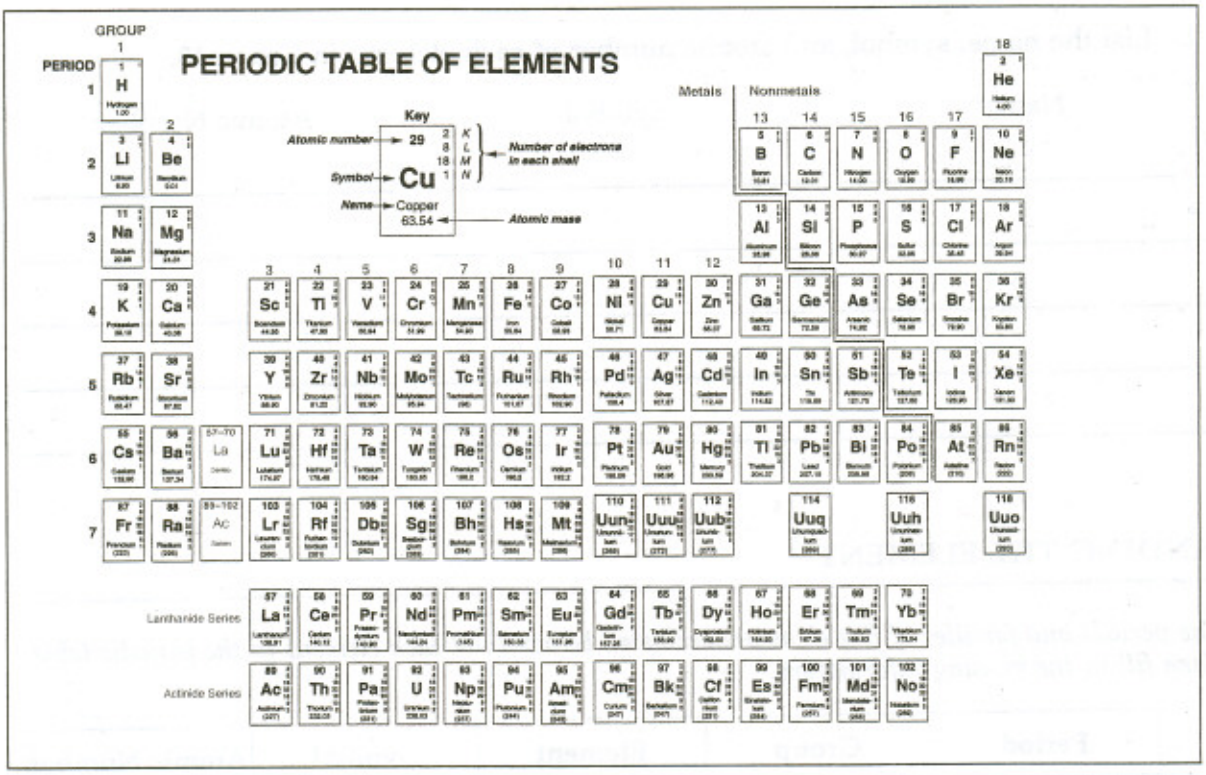


Figure A

USING THE PERIODIC TABLE

Answer the questions about the periodic table. The complete periodic table at the end of the book will tell you the names of the elements.

1. List the periods. _____

2. List the groups. _____

3. List the name, symbol, and atomic number of each element in Period 3.

Name	Symbol	Atomic Number

2. List the name, symbol, and atomic number of each element in Group 13.

Name	Symbol	Atomic Number

FINDING THE ELEMENT

The periods and families of five elements are listed below. Find each element in the periodic table. Then fill in the missing information.

	Period	Group	Element	Symbol	Atomic Number
1.	2	16			
2.	3	1			
3.	4	8			
4.	1	18			
5.	6	12			

After you have completed the chart, answer the following questions about the elements on the chart.

a) Which one of these elements is the lightest? _____

b) You know it is the lightest because it has the _____ (highest, lowest) atomic number.

FINDING THE PERIODS AND GROUPS

The names of five elements are listed below. Find each element in the periodic table. Then fill in the missing information.

Period	Group	Element	Symbol	Atomic Number
		chlorine		
		potassium		
		neon		
		tin		
		krypton		

After you have completed the chart, answer the following questions about the elements on the chart.

1. Which of these elements are metals? _____

2. Which of these elements are nonmetals? _____

3. Two of these elements have many properties that are alike.

   a) Name these elements. _____

   b) We know they are alike because they are in the same _____ (period, group)

4. Name the metals that have properties like tin. _____

   _____

5. Name four elements that have properties similar to chlorine. _____

   _____

FILL IN THE BLANK

Complete each statement using a term or terms from the list below. Write your answers in the spaces provided. Some answers may be used more than once.

1869	group	period	sixty	higher
Mendeleev	Russia	mass	similar	atomic number

1. The periodic table was put together by a man named _____ in the year _____.
2. The man who put together the periodic table came from _____.
3. The number of known elements in 1869 was _____.
4. The elements are listed according to _____.
5. Each element is given a number called its _____.
6. An atomic mass has to do with the _____ of an element.
7. A heavy element usually has a _____ atomic number than a light element does.
8. Elements in the same row across belong to the same _____.
9. Elements in the same up-and-down column belong to the same _____.
10. Elements of the same group have many properties that are _____.

COMPLETING SENTENCES

Choose the correct word or term for each statement. Write your choice in the spaces provided.

1. Elements in the same row across belong to the same _____ (period, group).
2. Elements in the same column down are members of the same _____ (period, group).
3. Elements that have many similar properties belong to the same _____ (period, group).
4. On the periodic table, metals are listed on the _____ (right, left).
5. On the periodic table, nonmetals are listed on the _____ (right, left).
6. There are more _____ (metals, nonmetals) than _____ (metals, nonmetals).
7. On the periodic table, elements are listed according to _____ (alphabet, atomic number).