**The Periodic Table of the Elements**

The periodic law was accepted immediately after its proposal by Mendeleyev. The scientist **proposed** a periodic table containing seventeen columns, resembling in a general way the present periodic table without the noble gases. In 1871 Mendeleyev **revised** this table and placed a number of elements in different positions, **corresponding to values** of their atomic weights. The atomic number of an element is the number of protons in the nucleus of the atom of that element.

The ―zero‖ group was added to the periodic table after the **discovery** of helium, neon, argon, krypton and xenon.

Most of the elements **occur** in the periodic table in the order of increasing atomic weights. There still remain four pairs of elements in the **inverted order** of atomic weight.

Mendeleyev **predicted** the existence of six elements which had not yet been discovered, corresponding to **vacant places** in his table. Three of these elements were soon discovered (scandium, gallium and germanium), and it was found that their properties are very close to those predicted by Mendeleyev.

The horizontal rows of the periodic table are called periods. The vertical columns of the periodic table are the groups of chemical elements. Elements in the same group are sometimes called **congeners**; these elements have closely related physical and chemical properties. For example, there are inert gases, light metals, nonmetals, lanthanides and actinides.

The modern Periodic Table not only clearly organizes all the elements, it **lucidly** illustrates that they form "families" in rational groups, **based on** their characteristics.

**4. Find words or phrases in the text above which are similar in meaning to the following:**

a) clear or easy to understand;

b) empty area, space;

c) to set, to use as a foundation;

d) to suggest or to plan;

e) to say that something will happen;

f) to match with; meet the requirements;

g) to read again; to study again;

h) an arrangement of things in a particular order/ in the opposite position;

i) things of the same category;

j) take place;

k) learning or finding something new/for the first time.

**5. Use the highlighted words and phrases from the text and complete the sentences.**

|  |
| --- |
| **lucidly inverted order discovery congener proposed predicted based on revised vacant places** |

1. Chemistry students use the periodic table which is *…* the atomic number and the physical properties of each element.

2. Mendeleyev *…* to reorder elements despite their accepted masses.

3. The arrangement of some elements is done in the *…* of their atomic weight.

4. The location of elements in the periodic table *…* their *…* .

5. A *…* refers to a class of combinations with similar structures and chemical properties.

6. Mendeleyev *…* the weights and chemical behaviors of some new elements.

7. It *…* demonstrates the characteristics of all chemical elements in the periodic table.

8. The *…* were left in the table in order to discover and place the missing elements.

9. Scientists made a *…* of a large helium gas field in Tanzania.

10. When the periodic table was *…* according to atomic number rather than atomic weight, the elements fit their places.

**6. Put these words in the correct order to make questions. Discuss these questions in pairs.**

1. considered /the ―father‖ /Who /of the modern/ is /periodic table/ to be?

2. Mendeleev/ organize/ in /the elements /How/ the periodic table /did?

3. When /he/ / a number of / place /elements / different /did / in /positions?

4. What / predict/ did/ Mendeleyev?

5. What/ fitted /the vacant /elements/ in the periodic table/ places?

6. What /the rows / are / and / in the periodic /columns /table?

b) **Match the words with the definitions**

1. to arrange a. the mass of atom of any element

2. work out b.to put things in a required order

3. value code c. five non-metallic elements

4. atomic weight d.to form or connect

5. property e. the importance or worth of elements

6. link f. quality or characteristic of something

7. halogens. g.to arrange or achieve something by resolving different problems