

# The Periodic Table and Periodic Law

## Section 6.1 Development of the Modern Periodic Table

In your textbook, reads about the history of the periodic table's development.

Use each of the terms below just once to complete the passage.

|          |              |                  |          |
|----------|--------------|------------------|----------|
| octaves  | atomic mass  | atomic number    | nine     |
| elements | properties   | Henry Moseley    | eight    |
| protons  | periodic law | Dmitri Mendeleev | accepted |

The table below was developed by John Newlands and is based on a relationship called the law of **(1)** \_\_\_\_\_. According to this law, the properties of the elements repeated every **(2)** \_\_\_\_\_ elements. Thus, for example, element two and element **(3)** \_\_\_\_\_ have similar properties. The law of octaves did not work for all the known elements and was not generally **(4)** \_\_\_\_\_.

|   |    |    |    |    |    |    |
|---|----|----|----|----|----|----|
| 1 | 2  | 3  | 4  | 5  | 6  | 7  |
| H | Li | G  | Bo | C  | N  | O  |
| 8 | 9  | 10 | 11 | 12 | 13 | 14 |
| F | Na | Mg | Al | Si | P  | S  |

The first periodic table is mostly credited to **(5)** \_\_\_\_\_. In his table, the elements were arranged according to increasing **(6)** \_\_\_\_\_. One important result of this table was that the existence and properties of undiscovered **(7)** \_\_\_\_\_ could be predicted.

The element in the modern periodic table are arranged according to increasing **(8)** \_\_\_\_\_, as a result of the work of **(9)** \_\_\_\_\_. This arrangement is based on number of **(10)** \_\_\_\_\_ in the nucleus of an atom of the element. The modern form of the periodic table results in the **(11)** \_\_\_\_\_, which states that when elements are arranged according to increasing atomic number, there is a periodic repetition of their chemical and physical **(12)** \_\_\_\_\_.

Section 6.1 *continued*

In your textbook, read about the modern periodic table.

Use the information in the box on the left taken from the periodic table to complete the table on the right.

|                                     |
|-------------------------------------|
| 7                                   |
| N                                   |
| Nitrogen                            |
| 14.007                              |
| [He]2s <sup>2</sup> 2p <sup>3</sup> |

|                               |            |
|-------------------------------|------------|
| <b>Atomic Mass</b>            | <b>13.</b> |
| <b>Atomic Number</b>          | <b>14.</b> |
| <b>Electron Configuration</b> | <b>15.</b> |
| <b>Chemical Name</b>          | <b>16.</b> |
| <b>Chemical Symbol</b>        | <b>17.</b> |

For each item in Column A, write the letter of the matching item in Column B.

## Column A

## Column B

- |   |                            |
|---|----------------------------|
| _____ 18. A column on the periodic table                  | a. metals                  |
| _____ 19. A row on the periodic table                     | b. group                   |
| _____ 20. Group A elements                                | c. period                  |
| _____ 21. Elements that are shiny and conduct electricity | d. representative elements |
| _____ 22. Group B elements                                | e. transition elements     |

In the space at the left, write *true* if the statement is true; if the statement is false, change the italicized word or phrase to make it true.

- \_\_\_\_\_ 23. There are *two* main classifications of elements.
- \_\_\_\_\_ 24. More than three-fourths of the elements in the periodic table are *nonmetals*.
- \_\_\_\_\_ 25. Group 1A elements (except for hydrogen) are known as the *alkali metals*.
- \_\_\_\_\_ 26. *Group 3A* elements are the alkaline earth metals.
- \_\_\_\_\_ 27. Group 7A elements are highly reactive nonmetals known as *halogens*.
- \_\_\_\_\_ 28. Group 8A elements are very unreactive elements known as *transition metals*.
- \_\_\_\_\_ 29. Metalloids have properties of both metals and *inner transition metals*.