

## Chapter 18

Use with Section 1

## ENRICHMENT

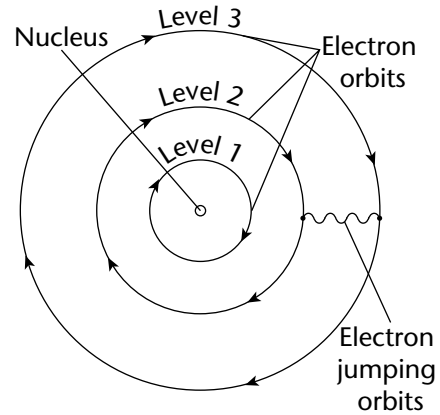
## ● The Story of the Atom

## The Bohr Model of the Atom

The theory of quantum mechanics explains the actions and structure of complex atoms. It is based on the model of the atom developed by Neils Bohr.

After receiving his doctorate in physics from the University of Copenhagen in 1911, Neils Bohr joined Ernest Rutherford in England to study the structure of the atom. Rutherford had shown that the atom was made up of negatively charged electrons orbiting a positively charged nucleus. Bohr built on this theory, proposing that electrons orbit at separate, individual energy levels. The lowest energy levels are closest to the nucleus and more energy is required to move out to a higher level. He suggested that outer orbits contained more electrons than inner orbits and that the arrangement of the electrons in an element determined the element's physical and chemical properties.

Bohr also used his model to describe how atoms emit radiation. He proposed that when an electron jumps from an orbit farther from the nucleus to an orbit closer to the nucleus it emits energy. Likewise, when an electron jumps from a closer orbit to a farther orbit, it absorbs energy.



Answer the following questions, using complete sentences.

1. In what ways is the Bohr model of the atom different from the Rutherford model?

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2. Suppose an atom has only one electron in only one level. Where might that electron go if it jumped out of its orbit?

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