

## Checking Concepts

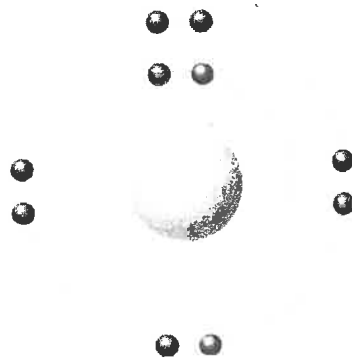
- On the periodic table on page 54, locate the metalloid with the lowest atomic number. What is its name and symbol?
- Draw a Bohr model diagram for atoms of each of the following elements:
  - carbon
  - fluorine
  - magnesium
  - sulphur
- What is an electron shell?
  - How many electrons can each of the four shells nearest the nucleus hold?
- How many electrons are in each electron shell in an atom of argon?
- Do metals gain or lose electrons as they form ions?
  - Do metals form negative ions or positive ions?
- Is the electron arrangement in a sodium ion similar to neon or to argon?
- Is the electron arrangement in an ion of chlorine similar to neon or argon?
- Explain the difference between a valence electron and a valence shell.
- What is similar about the electron arrangements of all the alkaline earth metals?
- Describe the pattern in the way the electron arrangement changes going left to right across the third period.

## Understanding Key Ideas

- What feature of the electron arrangements in noble gases causes them to be chemically unreactive?
- How can a metal atom achieve noble gas stability?
  - How can a non-metal atom achieve noble gas stability?
- Draw a Bohr model diagram for each of the following atoms:
  - Ne
  - S
  - K
  - Be

- Use the Bohr model diagram below to answer the following questions. This diagram shows the number of electrons, but not the number of protons.

- If this diagram represents an atom, not an ion, what element is it?
- If this diagram represents an ion with a charge of  $3^-$ , what element is it?
- If this diagram represents an ion with a charge of  $2^+$ , what element is it?



- Draw a Bohr model diagram for each of the following atoms or ions:
  - Ar
  - P and  $P^{3-}$
  - S and  $S^{2-}$
  - Cl and  $Cl^-$
  - K and  $K^+$
  - Ca and  $Ca^{2+}$
- What do you notice about the arrangement of electrons of the ions in parts (b) to (f) of question 15?

## Pause and Reflect

The hydrogen atom is the only atom that can either lose or gain an electron. Draw Bohr model diagrams for hydrogen when it gains and when it loses an electron. How does this ability to lose or gain an electron make hydrogen unique among all other elements?