Name _____ Date _____

Comprehension
Section 4.1

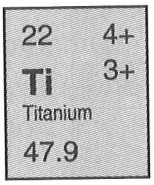
Use with textbook pages 168–180.

The atom and the subatomic particles

1. Use the following vocabulary words to label the diagram.

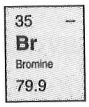
Vocabulary	
common ion charge other ion charge name	symbol atomic number average atomic mass

(a) _____
(b) _____
(c) _____
(d) _____



(e) _____
(f) _____

2. Examine the periodic table for the element below and complete the blanks.



(a) atomic number _____ (b) average atomic mass _____

(c) ion charge _____ (d) number of protons _____

(e) name of element _____ (f) number of neutrons _____

3. Complete the following table for the different atoms and ions. The first two rows have been completed to help you.

Element Name	Atomic Number	Ion Charge	Number of Protons	Number of Electrons	Number of Neutrons
potassium	19	1+	19	18	20
phosphorus	15	0	15	15	16
	3	0			
		2+	20		
nitrogen		3–			
	5	0			
argon				18	
	13			10	
chlorine		0			
			11	10	

Use with textbook pages 174–177.

Bohr diagrams

1. Define the following terms:

   (a) Bohr diagram _____

   (b) stable octet _____

   (c) valence shell _____

   (d) valence electrons _____

2. Complete the following table.

Atom/Ion	Atomic Number	Number of Protons	Number of Electrons	Number of Neutrons	Number of Electron Shells
neon atom					
fluorine atom					
fluorine ion					
sodium atom					
sodium ion					

3. Use the table above to draw the Bohr model diagram for each of the following atoms and ions.

neon atom	fluorine atom	fluorine ion	sodium atom	sodium ion

4. Draw the Bohr model diagram for each of the following compounds.

carbon dioxide (CO_2)	ammonia (NH_3)	calcium chloride ($CaCl_2$)

Use with textbook pages 176–180.

Lewis diagrams

1. Define the following terms:

(a) Lewis diagram

(b) lone pair _____

(c) bonding pair _____

2. Draw Lewis diagrams for each of the following elements.

(a) boron (b) nitrogen (c) aluminium (d) chlorine

3. Draw Lewis diagrams for each of the following ionic compounds.

(a) sodium oxide (b) potassium chloride (c) magnesium bromide

4. Draw Lewis diagrams for each of the following covalent compounds.

(a) carbon dioxide, CO_2 (b) phosphorus trifluoride, PF_3 (c) silicon tetrachloride, $SiCl_4$

5. Draw Lewis diagrams for each of the following diatomic molecules.

(a) chlorine, Cl_2 (b) nitrogen, N_2 (c) hydrogen, H_2