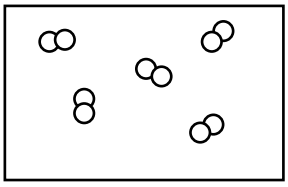
Chapter 4 Study Questions

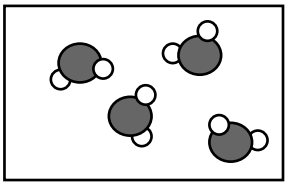
1. Classify the following as an element or compound.
   a) carbon b) H_2O c) Cl_2 d) sodium chloride e) KBr

2. Label each of the following drawings as element or compound. (Assume each type of circle represents a different type of atom.)

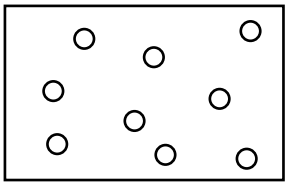
a)



b)



c)



_____ _____ _____

3. Which box in Question 2 could represent H_2O? Which box in Question 2 could be O_2?

4. Fill in the following table: (The first row is filled in for you.)

Nuclear Symbol	Atomic Number	Mass Number	Number of Protons	Number of Electrons	Number of Neutrons	Charge
$^{19}_{9}F^-$	9	19	9	10	10	-1
$^{40}_{18}Ar$	_____	_____	_____	_____	_____	_____
_____	_____	39	19	18	_____	_____
_____	16	_____	_____	_____	20	-2

5. Write the isotopic symbols for the isotopes of neon which contain 10 neutrons and 12 neutrons.

6. For each of the following elements, give the name, indicate the Period, and indicate whether it is a main group element (MG) or transition metal (TM). If the element is a main group element, indicate the group number and whether it is a metal, a nonmetal or a metalloid.
   a) Sr b) Br c) K
   d) P e) Ba f) Si
   g) Cu h) Hg

7. Provide the common names of Groups 1A, 2A, 7A & 8A.

8. The atomic mass of aluminum is 26.98. What is the isotopic symbol of the most likely major isotope of aluminum?

Summary of Chapter 4: Atoms and Elements

element symbols
elements
atoms
compounds
protons, electrons, neutrons
atomic number, mass number
atomic mass
isotopes
isotopic symbol
periods & groups
regions of the Periodic Table: main groups & transition metals
noble gases, halogens, alkali metals, alkaline earth metals
metals, nonmetals, metalloids
ions, cations, anions
charges of main group ions
simple isotopic abundance

Answers to Chapter 4 Study Questions

1. a) element b) compound c) element d) compound e) compound

2. a) element b) compound c) element

3. b) could represent H_2O. a) could be O_2.

4.

Nuclear Symbol	Atomic Number	Mass Number	Number of Protons	Number of Electrons	Number of Neutrons	Charge
$^{19}_{9}F^{-}$	9	19	9	10	10	-1
$^{40}_{18}Ar$	18	40	18	18	22	0
$^{39}_{19}K^{+}$	19	39	19	18	20	+1
$^{36}_{16}S^{2-}$	16	36	16	18	20	-2

5. $^{20}_{10}Ne$ and $^{22}_{10}Ne$

6. a) Strontium, Period 5, MG, Group 2A, metal
   b) Bromine, Period 4. MG, Group 7A, nonmetal
   c) Potassium, Period 4, MG, Group 1A, metal
   d) Phosphorus, Period 3, MG, Group 5A, nonmetal
   e) Barium, Period 6, MG, Group 2A, metal
   f) Silicon, Period 3, MG, Group 4A, metalloid
   g) Copper, Period 4, TM
   h) Mercury, Period 6, TM

7. Group 1A = alkali metals; Group 2A = alkaline earth metals; Group 7A = halogens; Group 8A = noble gases.

8. $^{27}_{13}Al$