REVIEW QUESTIONS
Chapter 4

1. Complete each question below with an appropriate term:

   a) **Noble gases** Un-reactive elements in the last group of the periodic table.

   b) **Alkaline-earth metals** Elements in group 2 of the periodic table.

   c) **Transition metals** Elements between the main group elements.

   d) **Halogens** Elements in group 7 of the periodic table.

2. Name and write symbol for each element described below:

   a) Alkali metal in period 4: **K, potassium**

   b) Halogen in period 2: **F, fluorine**

   c) Alkaline-earth metal in period 3: **Mg, magnesium**

   d) Metalloid in period 3: **Si, silicon**

   e) Noble gas in period 5: **Xe, xenon**

3. Complete each statement below with a suitable word or phrase:

   A) The "soccer ball" model of the atom is attributed to **John Dalton**

   B) Thomson discovered the **electron** in 1897.

   C) Rutherford discovered that the atom was mostly hollow through the **gold foil** experiment.

   D) The number of protons in an atom is called the **atomic number**

   E) Isotopes of an atom have the same **atomic number** but different **mass numbers**

   F) The group number of representative elements represents the **number of valence electrons**

4. For each element below, use the information given to determine the number of protons, neutrons and electrons in its atom, and write shorthand notation for each.

a) Krpton (Kr) atomic number (Z=36); mass number (A=84)

p^+ = ___**36**___ n^0 = ___**48**_____ e^- = ____**36**_____ Notation: $^{84}_{36}\mathbf{Kr}$

b) Barium (Ba) atomic number (Z=56); mass number (A=137)

p^+ = ___**56**___ n^0 = ___**81**_____ e^- = ____**56**_____ Notation: $^{137}_{56}\mathbf{Ba}$

5. Complete the missing information in the table below:

Symbol	Ga	$^{31}_{15}\mathbf{P}$
Protons	**31**	15
Neutrons	39	**16**
Electrons	**31**	**15**
Mass number	**70**	31

6. Complete the following table with the missing information:

Ion	**Number of Protons**	**Number of Electrons**	**Electrons Lost/Gained**
K^+	**19**	**18**	**1 Lost**
$\mathbf{Mg^{2+}}$	12	10	**2 lost**
$\mathbf{O^{2-}}$	8	**10**	2 gained
$\mathbf{Al^{3+}}$	**13**	10	3 lost

7. An unknown element Q has the following isotopic data:

Isotope	Mass (amu)	Abundance (%)
1	80.0	60.0
2	84.0	30.0
3	82.0	10.0

Calculate the average atomic mass of this element.

Avg atomic mass = (80.0 x 0.600)+(84.0 x 0.300)+ (82.0 x 0.100) = 81.4 amu

8. What is the relationship between each pair of elements shown below:

a) One with 10 protons, 11 neutrons, 10 electrons and one with 11 protons, 10 neutrons and 11 electrons.

These two elements are different elements (different atomic numbers) that have the same mass (same mass numbers).

b) One with 12 protons, 12 neutrons and 12 electrons and one with 12 protons, 14 neutrons and 12 electrons.

These two elements are isotopes of each other, since they have the same atomic number but different mass numbers.