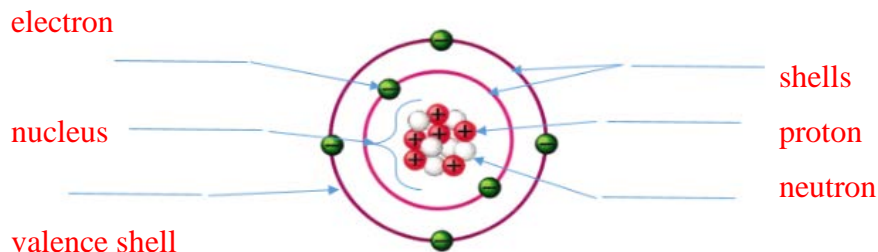


Unit 2 Chemistry Review

Kinds of Substances

1. Label the parts of an atom



2. What is a valence shell?

The outermost occupied electron shell of an atom

3. How many electrons can be held in the 1st, 2nd and 3rd shells?

1st – 2 2nd – 8 3rd – 8

4. Differentiate between a pure substance and a mixture. Give an example of each.

Pure substance: cannot be separated by physical means (water)

Mixture: can be separated by physical means (7-up)

5. Differentiate between a homogeneous mixture and heterogeneous mixture. Give an example of each.

Homogeneous mixture: mixture that looks the same throughout

Heterogeneous mixture: mixture where you can see the different components

6. Give an example of a physical property of matter. Give an example of a chemical property of matter.

Physical property: color, texture, size, etc

Chemical property: ability to burn, reacts with an acid

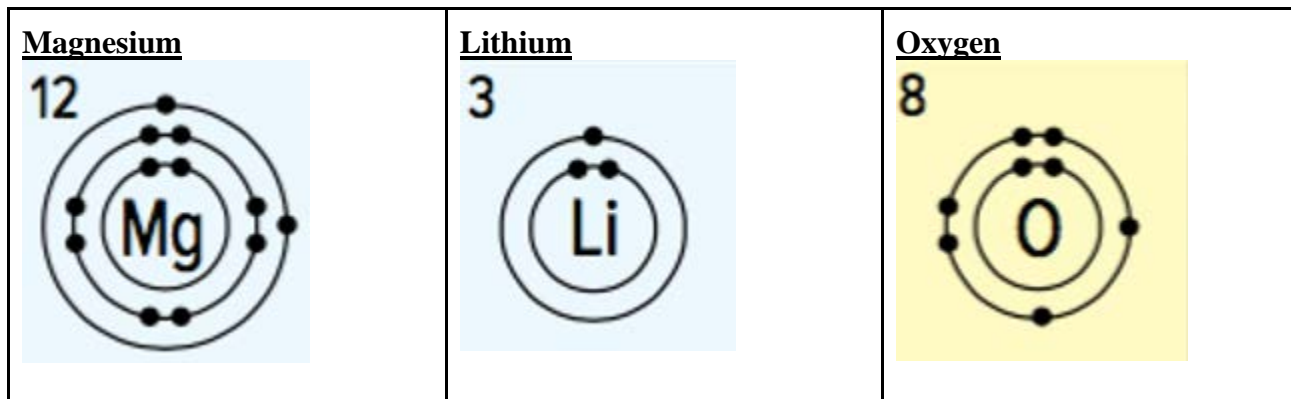
7. Approximately how many elements are there? How many occur 'naturally'?

~118

~92

Bohr Models

1. Draw Bohr Models for the following atoms:



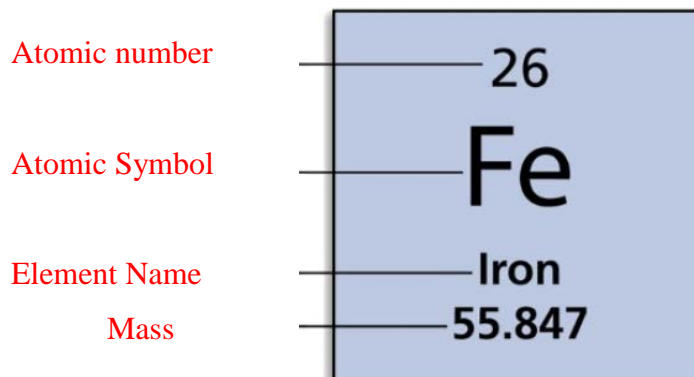
2. What patterns are observed in Bohr models for elements in the same family? Period?

Same family: same number of valence electrons, size/reactivity increases down the periodic table, similar properties

Same period: electrons are in the same valence shell, metals increase in reactivity moving to the left

Periodic Table.

1. What does each symbol and number in the box mean?



2. What is the difference between atomic number and mass number?

Atomic number: number of protons

Mass number: number of protons and neutrons

3. What are the 3 groups/types of elements? How are they different? Where are they located on the periodic table?

Alkali metals: 1st col. Alkaline Earths: 2nd col. Halogens: 17th col Nobel gases: 18th col

4. a) What are the horizontal rows on the periodic table called?

Periods

b) What are the vertical columns on the periodic table called?

Groups or families

5. How many elements are there in the 1st period?

2

6. Fill in the chart:

Name	Atomic number	Protons	Neutrons	Electrons	Mass Number
Silicon-28	14	14	14	14	28
Chromium-53	24	24	29	24	53
Iodine-127	53	53	74	53	127

7. List the following elements by atomic mass from lightest to heaviest. Write the atomic mass beside each one. Carbon calcium nickel cobalt zinc

a) zinc (65.4) b) calcium (40.1) c) cobalt (58.9) d) nickel (58.7) e) carbon (12)

Ions

1. a) How can metals achieve a kind of stability similar to the noble gases?

Lose electrons to expose the completed shell beneath

b) How can non-metals achieve a kind of stability similar to the noble gases?

Gain electrons to complete the valence shell

2. a) What type of ions do metals form?

Positive

b) How do they form this type of ion?



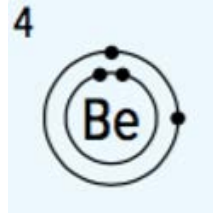
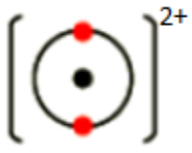
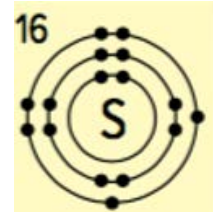
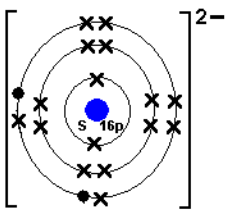
Lose electrons

3. a) What type of ions do non-metals form?

Negative

b) How do they form this type of ion? Gain electrons

Complete the following chart

Element	Bohr Diagram of neutral atom	# electrons being gained/lost	Charge on the ion	Bohr Diagram of ion
Li		1 lost	+1	
Be		2 lost	+2	
S		2 gained	-2	

Ionic Compounds

1. Give an example of a chemical name and a chemical formula.

chemical name: Silicon dioxide chemical formula: SiO₂

2. What does a chemical formula show?

The elements in a compound and how many of each

3. What is a multivalent metal?

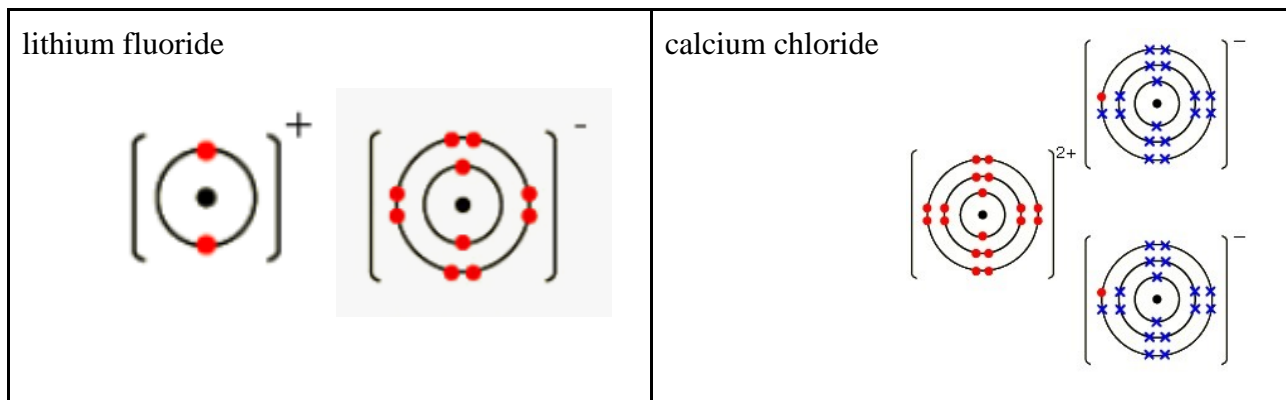
A metal that has more than one possible charge

4. What is a Roman numeral used for when writing chemical formulas?

The charge of an ion that is multivalent (tells us the charge)

Ex. +2 II

5. Draw a Bohr model for the following ionic compounds:



6. Complete the following questions:

Write the name for the following compounds:

a. Ag_3N	Silver nitride
b. CaI_2	Calcium iodide
c. NaF	Sodium fluoride
d. RbF	Rubidium fluoride
e. CdS	Cadmium sulfide
f. Mg_3P_2	Magnesium phosphide
g. CrBr_2	Chromium (II) bromide
h. MnO	Manganese (II) oxide
i. Fe_2O_3	Iron (III) oxide
j. Hg_3P_2	Mercury (II) phosphide
k. MnS_2	Manganese (IV) sulfide
l. $\text{Cr}(\text{CH}_3\text{COO})_3$	Chromium (III) acetate
m. $\text{Ba}_3(\text{PO}_3)_2$	Barium phosphite
n. $\text{Mg}_3(\text{PO}_4)_2$	Magnesium phosphate
o. $(\text{NH}_4)_3\text{PO}_4$	Ammonium phosphate
p. $(\text{NH}_4)_3\text{P}$	Ammonium phosphide

Write the formula for the following compounds:

a. aluminum phosphide	AlP
b. magnesium chloride	MgCl_2
c. cesium sulphide	Cs_2S
d. rubidium selenide	Rb_2Se
e. aluminum phosphide	AlP
f. copper(I) iodide	CuI
g. iron(II) phosphide	Fe_3P_2
h. iron(III) phosphide	FeP
i. tin(II) nitride	Sn_3N_2
j. lead(IV) chloride	PbCl_4
k. lead(II) hydroxide	$\text{Pb}(\text{OH})_2$
l. potassium permanganate	KMnO_4
m. magnesium hydroxide	$\text{Mg}(\text{OH})_2$
n. ammonium nitrate	NH_4NO_3
o. manganese(IV) sulphate	$\text{Mn}(\text{SO}_4)_2$