
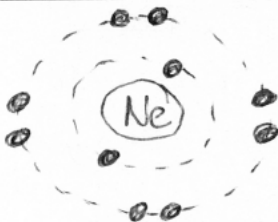



Science 9 - Practice Quiz – Bohr Model and Ionic Bonds (version A)

Name: KEY Block: \_\_\_\_\_

Element	Symbol	Number of Protons	Number of electrons in an atom of the element
Hydrogen	H	1	1
Neon	Ne	10	10
Aluminum	Al	13	13

Element	Draw the Bohr Model Diagram for the atom (show electron shells and electrons)
Hydrogen	
Neon	
Aluminum	

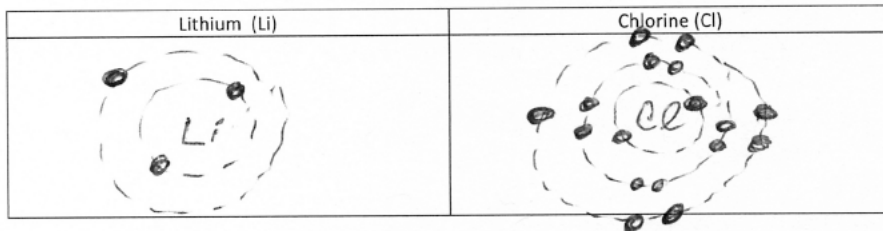
Element	Is this element likely to form an ion? (write "yes" or "no")	If the element forms an ion, does it gain or lose electrons? (write "gain" or "lose")	How many electrons will the atom gain or lose to form an ion? (state the number)	What is the total charge on the ion? (state the charge, + or -, and the numerical value of the charge)
Hydrogen	yes	either gain or lose	1	+1 or -1
Neon	no	NA	NA	NA
Aluminum	yes	lose	3	+3

(not applicable)

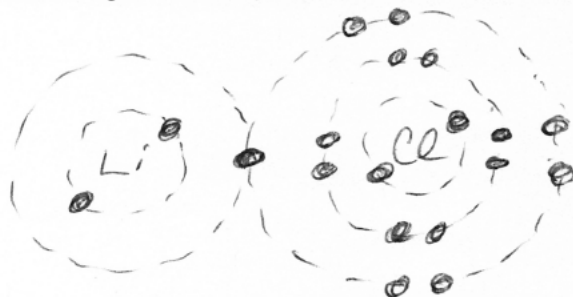
### Ionic Bonds

1. Answer the following questions on ionic compounds:

a. Draw the Bohr Diagrams for the following elements: Lithium and Chlorine



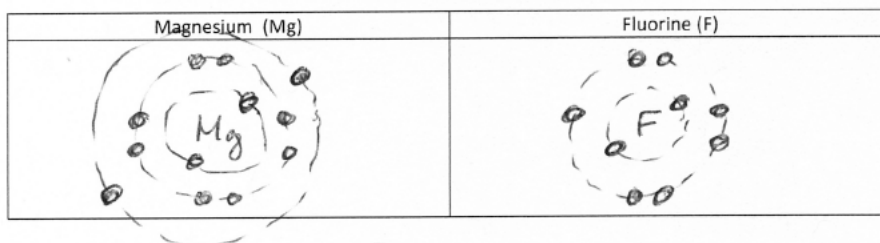
b. Draw the Bohr Diagram for the compound formed when Lithium bonds with Chlorine



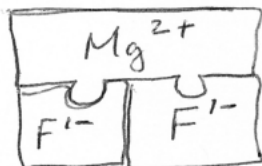
- c. What is the name of the compound formed: lithium chloride
- d. What is the chemical formula of the compound formed? LiCl

2. Answer the following questions on ionic compounds:

a. Draw the Bohr Diagrams for the following elements: Magnesium and Fluorine



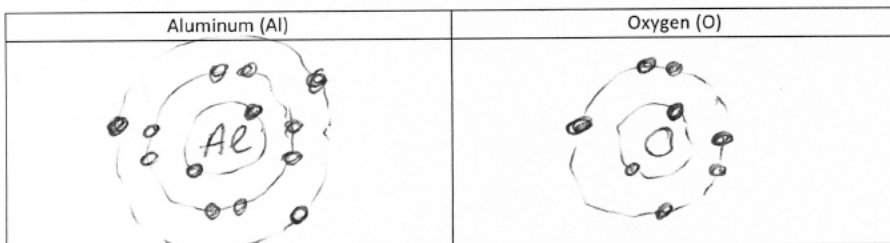
b. Draw the Bohr Diagram or Puzzle Piece Diagram for the compound formed when Magnesium bonds with Fluorine



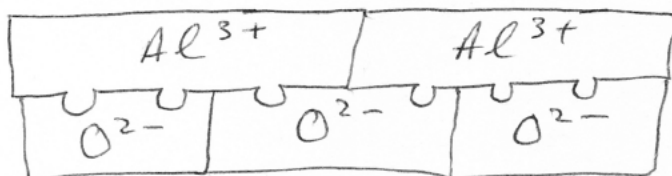
- c. What is the name of the compound formed: magnesium fluoride
- d. What is the chemical formula of the compound formed? MgF<sub>2</sub>

3. Answer the following questions on ionic compounds:

a. Draw the Bohr Diagram for the following elements: Aluminum and Oxygen



b. Draw the Bohr Diagram or Puzzle Piece Diagram for the compound formed when Aluminum bonds with Oxygen



- c. How many atoms of Aluminum are there in the compound?: 2
- d. How many atoms of Oxygen are there in the compound?: 3
- e. What is the name of the compound formed: aluminium oxide
- f. What is the chemical formula of the compound formed: Al<sub>2</sub>O<sub>3</sub>

4. Answer the following questions on ionic compounds:

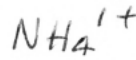
- a. If an ion has a charge of 1+ how many electrons were in it the valence shell of the atom before it was ionized? 1 (1 electron was lost to ionize the atom)
- b. If an ion has a charge of 2+ how many electrons were in it the valence shell of the atom before it was ionized? 2 (2 electrons were lost)
- c. If an ion has a change of 1- how many electrons did the valence shell of the atom accept? 1 (hint: think of column 17 on the periodic table; eg. Fluorine, Chlorine) (1 electron was gained)
- d. If an ion has a charge of 2- how many electrons did the valence shell of the atom accept? 2 (hint: think of column 16 on the periodic table; eg. Oxygen, Sulfur) (2 electrons were gained)

Polyatomic Ions

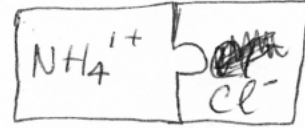
5. Based on what you know about ion charges and valence shells, answer the following questions about ionic compounds:

a. Draw the Puzzle Piece Diagram for the compound formed when Ammonium bonds with Chlorine

Ammonium



Chlorine



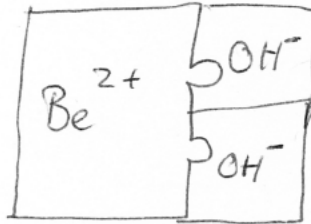
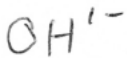
- b. How many atoms of Nitrogen are there in the compound? 1  
 c. How many atoms of Hydrogen are there in the compound? 4  
 d. How many atoms of Chlorine are there in the compound? 1

e. What is the name of the compound formed: ammonium chloride

f. What is the chemical formula of the compound formed:  $\text{NH}_4\text{Cl}$

6. Based on what you know about ion charges and valence shells, answer the following questions about ionic compounds:

a. Draw the Puzzle Piece Diagram for the compound formed when Beryllium bonds with Hydroxide



- b. How many atoms of Beryllium are there in the compound? 1  
 c. How many atoms of Oxygen are there in the compound?: 2  
 d. How many atoms of Hydrogen are there in the compound?: 2

e. What is the name of the compound formed: beryllium hydroxide




f. What is the chemical formula of the compound formed:  $\text{Be}(\text{OH})_2$

**Science 9 - Practice Quiz – Bohr Model and Ionic Bonds (version B)**

Name: \_\_\_\_\_

Block: \_\_\_\_\_

Element	Symbol	Number of Protons	Number of electrons in an atom of the element
Helium	He	2	2
Lithium	Li	3	3
Phosphorous	P	15	15

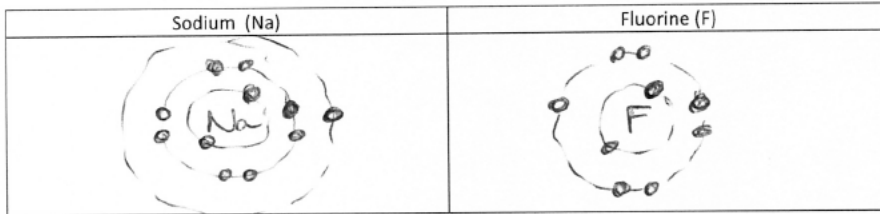
Element	Draw the Bohr Model Diagram for the atom (show electron shells and electrons)
Helium	
Lithium	
Phosphorous	

Element	Is this element likely to form an ion? (write "yes" or "no")	If the element forms an ion, does it gain or lose electrons? (write "gain" or "lose")	How many electrons will the atom gain or lose to form an ion? (state the number)	What is the total charge on the ion? (state the charge, + or -, and the numerical value of the charge)
Helium	No	Not applicable	—	—
Lithium	yes	lose	1	+1
Phosphorous	yes	gain	3	-3

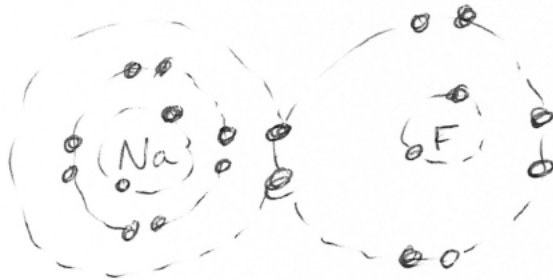
**Ionic Bonds**

1. Answer the following questions on ionic compounds:

a. Draw the Bohr Diagrams for the following elements: Sodium and Fluorine



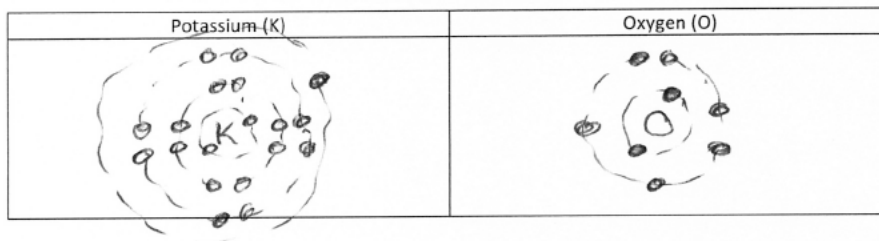
b. Draw the Bohr Diagram for the compound formed when Sodium bonds with Fluorine



- c. What is the name of the compound formed: sodium fluoride
- d. What is the chemical formula of the compound formed? NaF

2. Answer the following questions on ionic compounds:

a. Draw the Bohr Diagrams for the following elements: Potassium and Oxygen



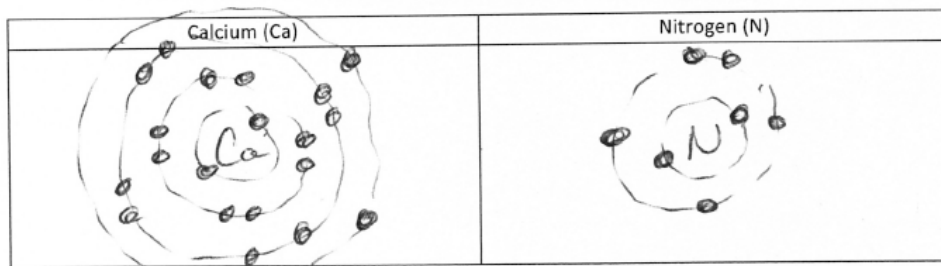
b. Draw the Bohr Diagram or Puzzle Piece Diagram for the compound formed when Potassium bonds with Oxygen



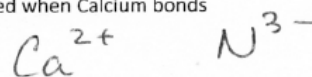
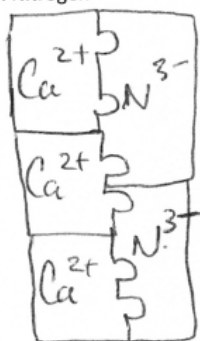
- c. What is the name of the compound formed: potassium oxide
- d. What is the chemical formula of the compound formed? K<sub>2</sub>O

3. Answer the following questions on ionic compounds:

a. Draw the Bohr Diagram for the following elements: Calcium and Nitrogen



b. Draw the Bohr Diagram or Puzzle Piece Diagram for the compound formed when Calcium bonds with Nitrogen



c. How many atoms of Calcium are there in the compound?: 3

d. How many atoms of Nitrogen are there in the compound?: 2

e. What is the name of the compound formed: calcium nitride

f. What is the chemical formula of the compound formed:  $Ca_3N_2$

4. Answer the following questions on ionic compounds:

a. If an ion has a charge of 1+ how many electrons were in it the valence shell of the atom before it was ionized?: 1 (1 electron was lost)  
(hint: think of the first column on the periodic table; eg. Sodium, Potassium)

b. If an ion has a charge of 2+ how many electrons were in it the valence shell of the atom before it was ionized?: 2 (2 electrons were lost)  
(hint: think of the second column on the periodic table; eg. Calcium, Magnesium)

c. If an ion has a change of 1- how many electrons did the valence shell of the atom **accept**:  
1 (1 electron was gained)  
(hint: think of column 17 on the periodic table; eg. Fluorine, Chlorine)

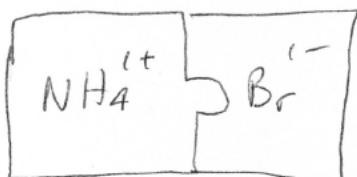
d. If an ion has a charge of 2- how many electrons did the valence shell of the atom **accept**:  
2  
(hint: think of column 16 on the periodic table; eg. Oxygen, Sulfur)

(2 electrons were gained.)

Polyatomic Ions

5. Based on what you know about ion charges and valence shells, answer the following questions about ionic compounds:

a. Draw the *Puzzle Piece Diagram* for the compound formed when Ammonium bonds with Bromine  $\text{Br}^{1-}$

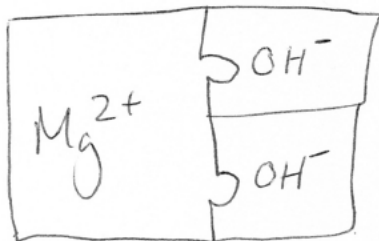


- b. How many atoms of Nitrogen are there in the compound?:  $\frac{1}{\quad}$   
c. How many atoms of Hydrogen are there in the compound?:  $\frac{4}{\quad}$   
d. How many atoms of Bromine are there in the compound?:  $\frac{1}{\quad}$

e. What is the name of the compound formed: ammonium bromide  
f. What is the chemical formula of the compound formed:  $\text{NH}_4\text{Br}$

6. Based on what you know about ion charges and valence shells, answer the following questions about ionic compounds:

a. Draw the *Puzzle Piece Diagram* for the compound formed when Magnesium bonds with Hydroxide  $\text{OH}^{1-}$



- b. How many atoms of Magnesium are there in the compound?:  $\frac{1}{\quad}$   
c. How many atoms of Oxygen are there in the compound?:  $\frac{2}{\quad}$   
d. How many atoms of Hydrogen are there in the compound?:  $\frac{2}{\quad}$

e. What is the name of the compound formed: magnesium hydroxide  
f. What is the chemical formula of the compound formed:  $\text{Mg}(\text{OH})_2$