Name: HORTON Period: KEY

Chemical Bonding – Ionic & Covalent!

PART 1: Determine if the ions in the following compounds are metals or non-metals. Describe the type of bonding that occurs in the compound. Name the compound

Compound	Ion 1 (metal, polyatomic, or Non-metal?)	Ion 2 (polyatomic or Non-metal?)	Bond Type	Compound Name	
NO_2	N = non-metal	O = non-metal	covalent	Nitrogen dioxide	
1. SO_2	S = non-metal o	O = non-metal o	covalent o	Sulphur dioxide	•
2. $MgBr_2$	Mg - metal o	Br - non-metal o	ionic o	magnesium bromide	o
3. $KClO_3$	K - metal o	ClO_3 polyatomic •	ionic •	potassium chlorate.	✓
4. AlF_3	Al - metal o	F - non-metal o	ionic o	aluminum fluoride.	o
5. $CuCl_2$	Cu - metal o	Cl - non-metal o	ionic o	copper(II) chloride.	*
6. NO_2	N - non-metal o	O - nonmetal o	covalent o	nitrogen dioxide.	•
7. $(NH_4)_2SO_4$	NH_4 - polyatomic ✓	SO_4 polyatomic •	ionic ✓	ammonium sulphate.	** +
8. Rb_2S	Rb - metal o	S - non-metal o	ionic o	rubidium sulphide.	•

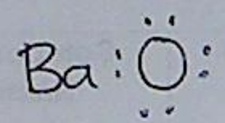
				bromide	o
3. $KClO_3$	K-metal	ClO_3 polyatomic	ionic	potassium chlorate.	✓
4. AlF_3	Al-metal	F-non-metal	ionic	aluminum fluoride.	o
5. $CuCl_2$	Cu-metal	Cl-non-metal	ionic	copper (II) chloride.	*
6. NO_2	N-nonmetal	O. nonmetal	covalent	nitrogen dioxide.	•
7. $(NH_4)_2SO_4$	NH_4- polyatomic	SO_4 polyatomic	ionic	ammonium sulphate.	* +
8. Rb_2S	Rb-metal	S-non-metal	ionic	rubidium sulphide.	•
9. NBr_3	N-non-metal	Br-non-metal	covalent	nitrogen tribromide.	•
10. Fe_2O_3	Fe-metal	O-non-metal	ionic	iron (III) oxide	*

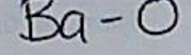
o Minimally Meeting /27 ✓Meeting /5 *Exceeding /4

• Moderately Meeting /10 +Fully Meeting /3

PART 2 Use Lewis dot structures to show the ionic bonding in the following pairs of elements. Write the correct chemical formula for the ionic compound that forms.

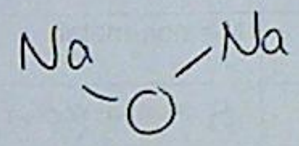
1) barium oxide (Ba and O)





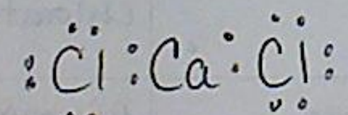
Formula: BaO

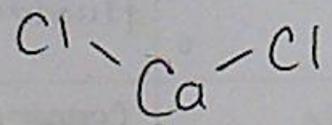
2) sodium oxide (Na and O)



Formula: Na_2O

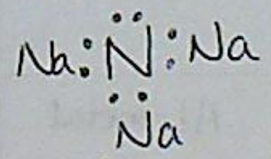
3) calcium chloride (Ca and Cl)

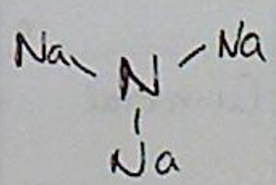




Formula: $CaCl_2$

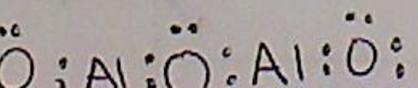
4) sodium nitride (Na and N)





Formula: Na_3N ✓

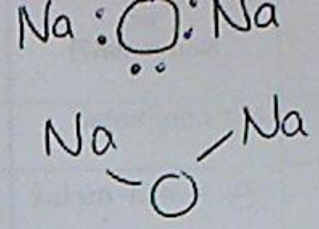
5) aluminum oxide (Al and O)



6) magnesium phosphide (Mg and P)

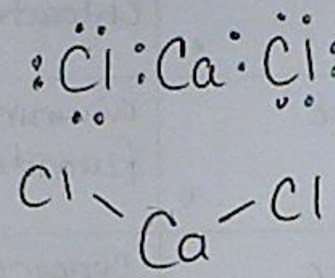
Ba-O

Formula: BaO



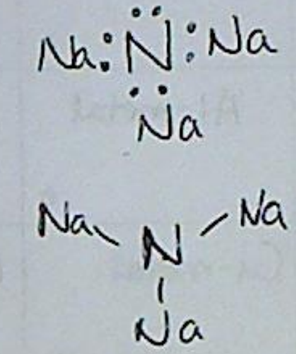
Formula: Na_2O

3) calcium chloride (Ca and Cl)



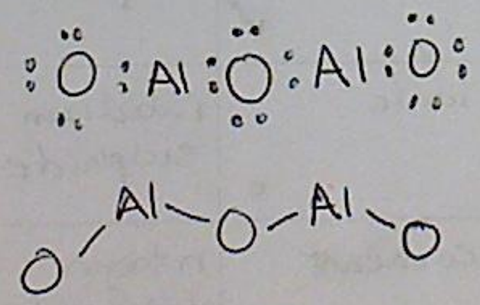
Formula: $CaCl_2$

4) sodium nitride (Na and N)



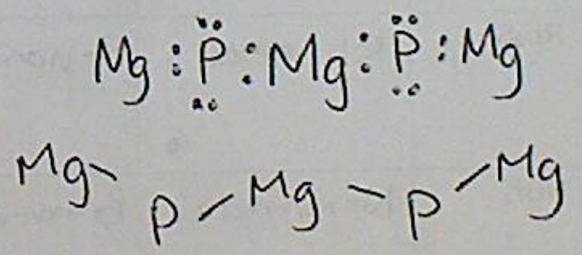
Formula: Na_3N

5) aluminum oxide (Al and O)



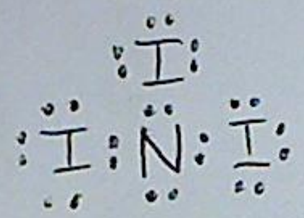
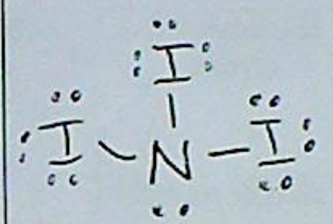
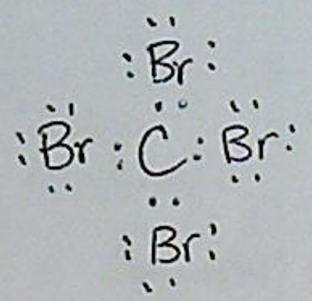
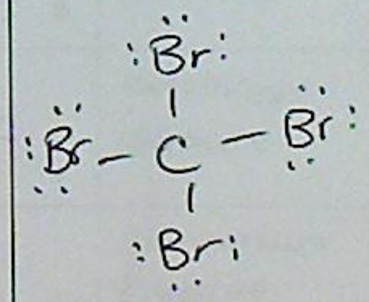
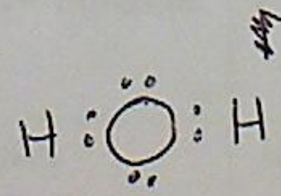
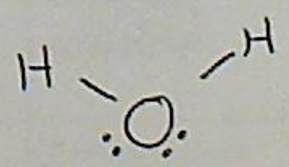
Formula: Al_2O_3

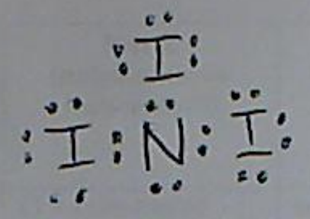
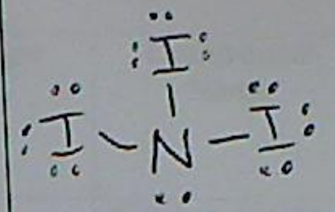
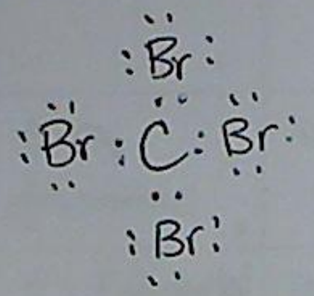
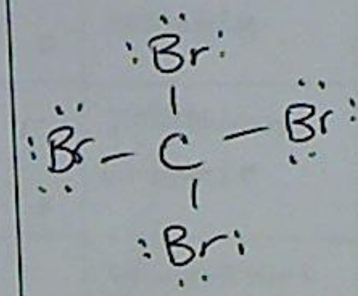
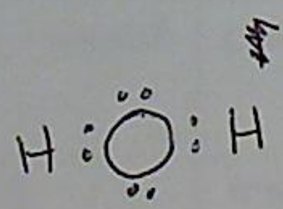
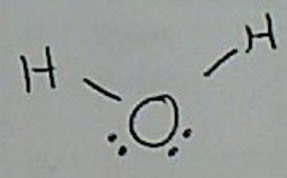
6) magnesium phosphide (Mg and P)



Formula: Mg_3P_2

PART 3 Use Lewis dot structures to show the covalent bonding in the following pairs of elements. Once you have determined the structure for the molecule, write its structural formula in the space provided; use a dash to represent a shared pair of electrons, and dots to show unshared electrons.

1) nitrogen triiodide (NI_3)	Show work here... HINT: nitrogen is in the middle!	**Final Answer:**
N I 5 + 3(7) 5 + 21 24		
2) carbon tetrabromide (CBr_4)	Show work here... HINT: carbon is in the middle!	**Final Answer:**
C Br 4 + 4(7) 4 + 28 32		
3) dihydrogen monoxide (H_2O)	Show work here... HINT: oxygen is in the middle!	**Final Answer:**
2(1) + 6 2 + 6 8		

1) nitrogen triiodide (NI_3) N I 5 + 3(7) 5 + 21 24		 *
2) carbon tetrabromide (CBr_4) C Br 4 + 4(7) 4 + 28 32	Show work here HINT: carbon is in the middle! 	**Final Answer:**  +
3) dihydrogen monoxide (H_2O) 2(1) + 6 2 + 6 8	Show work here...HINT: oxygen is in the middle! 	**Final Answer:**  ✓

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