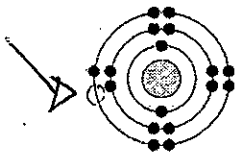
Chemistry: Chapter 4 Name: KEY

Science 10 Block: ___ Date: _____

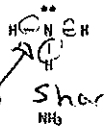
1. When it forms an ion, this element will probably... Gain 1 electron to become negative (-1)



2. How do Bohr models differ from Lewis diagrams?

-Bohr models include neutrons + protons in the nucleus and all electrons in energy levels. Lewis diagrams only have valence electrons.

3. Here is a model of ammonia.



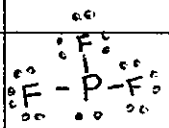
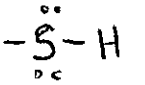
a) Is it ionic or covalent? Why?

Covalent! Two non metals

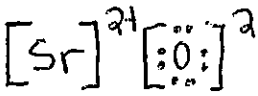
Show sharing of e⁻

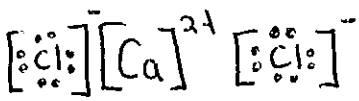
b) How many bonding pairs does it have? 3 How many non-bonding pairs does it have? 1

4. Complete the following table.

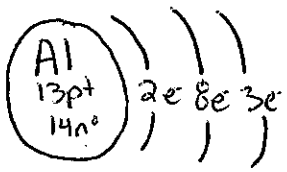
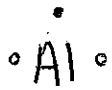
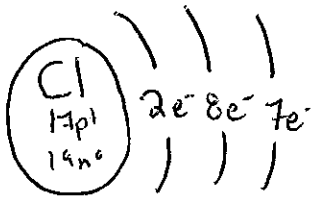
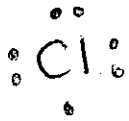
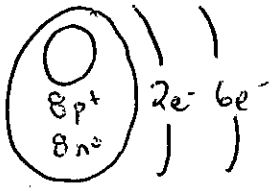
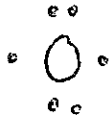
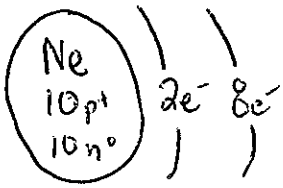
Molecular formula	Lewis diagram	Number of bonding pairs	Number of non-bonding pairs
PF_3		3	10
H_2S		2	2

5. Draw the Lewis structure for

a) SrO 

b) $CaCl_2$ 

6. Complete the following table.

Element	Bohr Model	Lewis Diagram
aluminium		
chlorine		
oxygen		
neon		

7. Indicate if each compound is ionic or covalent and write its name.

Compound	Ionic or covalent?	Name
N_2F_4	covalent	dinitrogen tetrafluoride
$Na_2Cr_2O_7$	ionic	sodium dichromate
FeI_3	ionic	iron III iodide
PBr_3	covalent	phosphorus tribromide
$ThCl_4$	ionic	thorium chloride
NBr_3	covalent	nitrogen tribromide
PbS_2	ionic	lead IV sulfide
NH_4CH_3COO	ionic	ammonium acetate

8. Indicate if each compound is ionic or covalent and write its formula.

Compound	Ionic or covalent?	Formula
iron III nitrate	ionic	$Fe(NO_3)_3$
scandium oxide	ionic	Sc_2O_3
tétraphosphorus décaoxide	covalent	P_4O_{10}
calcium perchlorate	ionic	$Ca(ClO_4)_2$
sulfur hexaiodide	covalent	SI_6
lead IV sulfite	ionic	$Pb(SO_3)_2$
ammonium phosphate	ionic	$(NH_4)_3PO_4$

9. Balance the following equations.

a) 1 N_2 + 3 H_2 → 2 NH_3

b) 2 N_2 + 1 O_2 → 2 N_2O

c) 1 Zn + 2 HCl → 1 $ZnCl_2$ + 1 H_2

d) 2 $Al(OH)_3$ + 3 H_2SO_4 → 1 $Al_2(SO_4)_3$ + 6 H_2O
HOH

e) 2 $C_7H_6O_2$ + 15 O_2 → 14 CO_2 + 6 H_2O

10. For each situation, write the word equation and find the balanced equation

a) Solid magnesium reacts with oxygen gas to form solid magnesium oxide.

Magnesium + oxygen → magnesium oxide

$2Mg_{(s)} + O_{2(g)} \rightarrow 2MgO_{(s)}$

b) Iron reacts with oxygen to produce rust, Fe_2O_3.

iron + oxygen → iron III oxide

$4Fe + 3O_2 \rightarrow 2Fe_2O_3$

c) Nitrogen gas reacts with bromine gas and forms nitrogen tribromide gas.

nitrogen + bromine → nitrogen tribromide

$N_2 + 3Br_2 \rightarrow 2NBr_3$

d) The combustion of methane, $CH_4(g)$, needs oxygen. This reaction produces carbon dioxide gas and water vapor.

methane + oxygen → carbon dioxide + water

$CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$