

**Physical Science
Chemistry Review Worksheet**

Name: _____ Block: ____

Polyatomic Ions					
Ammonium	NH_4^+	Hydroxide	OH^-	Cyanide	CN^-
Carbonate	CO_3^{2-}	Nitrate	NO_3^-	Nitrite	NO_2^-
Phosphate	PO_4^{3-}	Sulfate	SO_4^{2-}	Sulfite	SO_3^{2-}
Chlorate	ClO_3^-	Chromate	CrO_4^{2-}		

- Place the following models of the atom on a timeline, earliest to latest:
 - Atoms are mostly space
 - Electrons move in complex shapes called orbitals
 - Matter is made up of indivisible atoms
 - Electrons orbit in very distinct energy levels and can move from one to another
 - Atoms have positively charged and negatively charged parts
 - Atoms of an element are all alike, and different from atoms of other elements
 - In an atom, electrons orbit around a nucleus

Earliest ___ ___ ___ ___ ___ ___ ___ Latest

- Which of the atomic models above is necessary to explain how a flame test works?

- Using your periodic table, fill in the following table:

Name	Symbol	Atomic Number	Atomic Mass	Protons	Neutrons	Electrons
Sodium						
	Fe					
		81				
			137.3			
				50		
					54	
						19

4. Draw abbreviated Bohr models of the following:

a. Zn

b. Mo^{2+}

c. ${}_{135}^{55}\text{Cs}$

5. **Level 1:** Provide the electron configuration for the atoms above in #4

a. Zn

b. Mo^{2+}

c. ${}_{135}^{55}\text{Cs}$

6. Draw Lewis dot diagrams of the following:

a. Mg

b. Cl

c. Se^{2-}

7. Fill in the following table:

Symbol	Name	Oxidation Number	Valence Electrons
N			
	Potassium		
Ca			
	Fluorine		
Sr			
	Tin		

8. Write the chemical formulas for the following compounds:

a. Magnesium chloride

d. Dihydrogen monoxide

b. Aluminum oxide

e. Iodine heptafluoride

c. Carbon tetrachloride

Level 1:

f. Iron (III) oxide

g. Barium nitrate

h. Calcium hydroxide

i. Magnesium phosphate

9. Write the name of each of the following:

a. CaCl_2

c. SO_3

b. N_2O_4

d. CO

Level 1:

e. CuF_2

f. MgSO_4

10. Name the naturally occurring diatomic molecules:

11. Draw Lewis structures of the following. Show all bonds as lines, and show unpaired electrons.

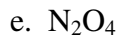
a. CO_2

b. O_3

c. SiO_2

d. C_2H_6

Level 1:



12. Label each of the following characteristics as more typical of ionic or covalent compounds:

a. Low melting points _____

b. Form a crystal lattice _____

c. Combine two non-metals _____

d. Formed with hydrogen _____

e. Combine two elements in different proportions _____

13. Give an example of a balanced chemical equation for each of the following types of reactions:

a. Composition (synthesis) _____

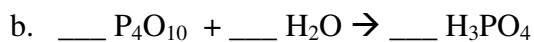
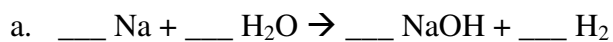
b. Decomposition _____

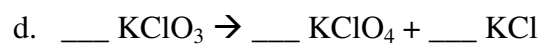
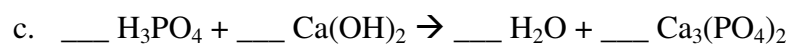
c. Single replacement _____

d. Double replacement _____

e. Combustion _____

14. Balancing the following:





15. Write a balanced equation for the following:

a. Sugar ($\text{C}_{12}\text{H}_{22}\text{O}_{11}$) burns

b. Composition of hydrogen gas and bromine liquid

Level 1:

c. Single replacement reaction for copper (II) nitrate and magnesium

d. Potassium hydroxide reacts with aluminum chloride in a double replacement reaction

16. (Level 1) Using the electronegativities shown, classify the bonds in the following compounds as covalent (<0.3), polar covalent, or ionic (>1.7):

- a. HCl _____
- b. NaF _____
- c. N₂ _____
- d. AlBr₃ _____
- e. CS₂ _____
- f. BCl₃ _____

H							
2.20							
Li	Be		B	C	N	O	F
0.98	1.57		2.04	2.55	3.04	3.44	3.98
Na	Mg		Al	Si	P	S	Cl
0.90	1.31		1.61	1.90	2.19	2.58	3.16
K	Ca		Ga	Ge	As	Se	Br
0.82	1.00		1.81	2.01	2.18	2.55	2.96

17. (Level 1) Put the following compounds in order of most non-polar covalent to most ionic:

- a. NaCl
- b. SO₂
- c. H₂
- d. CaO₂
- e. AlBr₃
- f. GaP

Non-polar covalent _____ Ionic