

**Physical Science  
Chemistry Review Worksheet**

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

<b>Polyatomic Ions</b>					
Ammonium	$\text{NH}_4^+$	Hydroxide	$\text{OH}^-$	Cyanide	$\text{CN}^-$
Carbonate	$\text{CO}_3^{2-}$	Nitrate	$\text{NO}_3^-$	Nitrite	$\text{NO}_2^-$
Phosphate	$\text{PO}_4^{3-}$	Sulfate	$\text{SO}_4^{2-}$	Sulfite	$\text{SO}_3^{2-}$
Chlorate	$\text{ClO}_3^-$	Chromate	$\text{CrO}_4^{2-}$		

- 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.  $\text{Mo}^{2+}$

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

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

a. Zn

b.  $\text{Mo}^{2+}$

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

6. Draw Lewis dot diagrams of the following:

a. Mg

b. Cl

c.  $\text{Se}^{2-}$

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.  $\text{CaCl}_2$

c.  $\text{SO}_3$

b.  $\text{N}_2\text{O}_4$

d.  $\text{CO}$

**Level 1:**

e.  $\text{CuF}_2$

f.  $\text{MgSO}_4$

10. Name the naturally occurring diatomic molecules:

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

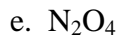
a.  $\text{CO}_2$

b.  $\text{O}_3$

c.  $\text{SiO}_2$

d.  $\text{C}_2\text{H}_6$

**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) \_\_\_\_\_

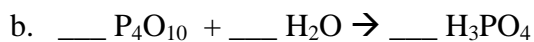
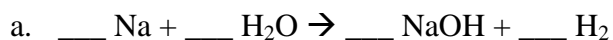
b. Decomposition \_\_\_\_\_

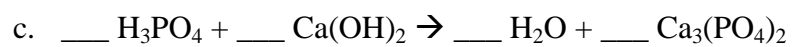
c. Single replacement \_\_\_\_\_

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. N<sub>2</sub> \_\_\_\_\_
- d. AlBr<sub>3</sub> \_\_\_\_\_
- e. CS<sub>2</sub> \_\_\_\_\_
- f. BCl<sub>3</sub> \_\_\_\_\_

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

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

- a. NaCl
- b. SO<sub>2</sub>
- c. H<sub>2</sub>
- d. CaO<sub>2</sub>
- e. AlBr<sub>3</sub>
- f. GaP

Non-polar covalent \_\_\_\_\_ Ionic