

Physical Science Unit Schedule: Weeks 19-21

Unit	Chapter(s)	Essential Questions:
Chemical Bonds	6	-What properties of atoms allows them to bond with other atoms? -What are the different types of chemical bonds?
Chemical Reactions	7	-What are the different classes of chemical reactions? -How do we know when a chemical reaction has occurred? -What are some factors that affect chemical reactions?

Timeline:

Date	In Class	Activities	Homework
Week 19	Chapter 6 Pretest Discuss Chapter 6	Molecule Lab Do Naming Compounds/Writing Formulas Practice Problems— see below	Read Chapter 6 and take notes Do #'s #1-8 p.164, 1-8 p.169, 1-7 p.175, 1-8 p.181 Naming Compounds/Writing Formulas Practice Problems
Week 20	Chapter 6 Test	Lab: "Empirical Formula Determination", p. 72 <i>Addison-Wesley Chemistry Laboratory Manual</i>	Read Lab: "Empirical Formula Determination", p. 72 <i>Addison-Wesley Chemistry Laboratory Manual</i> and write procedure Study for Chapter 6 Test Read Chapter 7 and take notes Do #'s #1-10 p. 198, 1-8 p. 205, 1-7 p.209, 1-8 p.215, 1-6 p.219
Week 21	Chapter 7 Pretest Discuss Chapter 7	Lab: "Types of Chemical Reactions" p. 81 <i>Addison-Wesley Chemistry Laboratory Manual</i>	Read Lab: "Types of Chemical Reactions" p. 81 <i>Addison-Wesley Chemistry Laboratory Manual</i> and write procedure
Week 22	Discuss Chapter 7	Lab: "Balanced Chemical Equations", p. 93 <i>Addison-Wesley Chemistry Laboratory Manual</i>	Read Lab: "Balanced Chemical Equations", p. 93 <i>Addison-Wesley Chemistry Laboratory Manual</i> and write procedure

ACS Physical Science Chapter 6 Practice Problems:

Naming Compounds/Writing Formulas

Directions: Name the compounds for which you have been given the formula and write the formula for the compounds for which you have been given the name. Use the prefix system of naming for molecules (not the Stock system) and the other rules given in your textbook and in Mr. Hollingworth's primer: Naming Compounds/Writing Formulas to do this.

1. $\text{Mg}(\text{NO}_3)_2$
2. CuN_3
3. $(\text{NH}_4)_2\text{CO}_3$
4. FeBr_2
5. HCl
6. Lead (II) nitrate
7. Tin (IV) nitrate
8. Manganese (VII) oxide
9. Acetic acid
10. Aluminum sulfide
11. Dichlorine heptoxide
12. Pentane
13. Carbon disulfide
14. Ammonia
15. Octane
16. NO
17. CCl_4
18. P_4O_{10}
19. C_4H_{10}
20. PCl_3

Physical Science

Naming Compounds

Some Compounds have widely accepted common names: Ex: H_2O = Water,
 NH_3 =Ammonia

Some acids and bases have special names. See Table 5.7 p. 182

If your compound is not one of these specially named compounds, then proceed below.

First Determine if the compound is **Ionic or Covalent**

Ionic Compounds are composed of:	Covalent Compounds are composed of:
<ul style="list-style-type: none"> • Metal + Nonmetal • Anything with a Polyatomic Ion 	<ul style="list-style-type: none"> • Nonmetal + Nonmetal • Hydrocarbons- have specific names

After you determine if the compound is **Ionic or Covalent**, follow the rules below to name it.

Naming Ionic Compounds:	Naming Covalent Compounds:
Do Not use Prefixes (ex: mono, di, tri, etc.) Ratios of elements in ionic compounds are implied by oxidation numbers of elements (ex: NaCl is called Sodium Chloride . It is a 1:1 ratio because Na^+ and Cl)	Use Prefixes (mono-, di-, tri-, etc.) to denote the ratio of elements in a compound (Ex: N_2O_5 is in a ratio of 2:5, so we call it Dinitrogen Pentoxide)
Name the last element in a compound with the suffix -ide (ex: Sodium Chloride)	Name the last element in a compound with the suffix -ide (Carbon Dioxide)
Use Roman Numerals to denote the charges on transition metals (ex: FeS is named Iron (II) Sulfide since in this compound, Iron has a 2+ oxidation number) Ie: Fe^{2+} and S^{2-} have combined	Do Not write the prefix mono- on the first atom in a compound (Ex: CO_2 is written Carbon Dioxide)
Do Not change the name of polyatomic ions (ex: NH_4NO_3 is called Ammonium Nitrate)	Hydrocarbons have specific names that you need to memorize (Ex: C_2H_6 is ethane , C_3H_8 is propane , etc.)

<p>To name Hydrates:</p> <ul style="list-style-type: none"> • First name ionic compound • Write prefix (to denote the number of formula units of hydrate) + hydrate • Ex: $(\text{NH}_4)_2\text{SO}_3 \cdot \text{H}_2\text{O}$ is called Ammonium Sulfite Monohydrate 	
--	--

Writing Formulas

First Determine if the compound is **Ionic or Covalent**



After you determine if the compound is **Ionic or Covalent**, follow the rules below to write the formula.



Formulas for Ionic Compounds	Formulas for Covalent Compounds
Charges of ions in an ionic compound must equal zero (0).	Use the name of the compound to write the formula.
<p>Ex: Sodium Chloride = NaCl Because: Na^+ and Cl^- combine in a 1:1 ratio $1(1+) + 1(1-) = 0$</p>	<p>Ex: Silicon Dioxide = SiO_2</p>
<p>Ex: Ammonium Sulfite = $(\text{NH}_4)_2\text{SO}_3$ Because: NH_4^+ and SO_3^{2-} combine in a 2:1 ratio $2(1+) + 1(2-) = 0$</p>	<p>Ex: Dinitrogen Pentoxide = N_2O_5</p>
<p>Ex: Manganese (III)Oxide = Mn_2O_3 Because: Mn^{3+} and O^{2-} combine in a 2:3 ratio $2(3+) + 3(2-) = 0$</p>	<ul style="list-style-type: none"> • Saturated Hydrocarbons have specific ratios of Carbon to Hydrogen atoms • The number of Hydrogens can be found by multiplying the number of Carbons by 2 and adding 2 • Ex: Heptane = C_7H_{16} • Equation: $\#C(2) + 2 = \#H$ • Ie: $7(2) + 2 = 16$
For Hydrates: First balance the charges on the ionic compound, and then write the	

<p>number of formula units for the water molecule</p> <p>Ex: Barium Iodide Dihydrate = $\text{BaI}_2 \cdot 2\text{H}_2\text{O}$</p> <p>Because: Ba^{2+} and I^- combine in a 1:2 ratio</p> $1(2+) + 2(1-) = 0$ <p>AND</p> <p>We have 2 formula units of Water per formula unit of Barium Iodide</p>	
---	--