

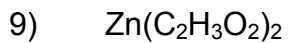
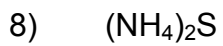
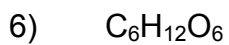
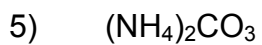
## Unit Conversions Worksheet

- 1) How many inches are there in 45.6 cm? (There are 2.54 cm in 1 inch)
- 2) How many centimeters are there in  $1.23 \times 10^{-6}$  kilometers?
- 3) How many hours are there in 34.5 years?
- 4) How many inches are there in 355 millimeters?
- 5) How many milliliters are in a cubic meter? (There are 1,000 L in  $1 \text{ m}^3$ )
- 6) How many miles are there in  $3.44 \times 10^8$  inches? There are 0.61 miles in 1 km).



## Molar Mass Practice Worksheet

*Find the molar masses of the following compounds:*



## Mole Calculation Practice Worksheet

*Answer the following questions:*

- 1) How many moles are in 25 grams of water?
  
  
  
  
  
  
  
  
  
  
- 2) How many grams are in 4.5 moles of  $\text{Li}_2\text{O}$ ?
  
  
  
  
  
  
  
  
  
  
- 3) How many molecules are in 23 moles of oxygen?
  
  
  
  
  
  
  
  
  
  
- 4) How many moles are in  $3.4 \times 10^{23}$  molecules of  $\text{H}_2\text{SO}_4$ ?
  
  
  
  
  
  
  
  
  
  
- 5) How many molecules are in 25 grams of  $\text{NH}_3$ ?
  
  
  
  
  
  
  
  
  
  
- 6) How many grams are in  $8.2 \times 10^{22}$  molecules of  $\text{N}_2\text{I}_6$ ?

## Moles, Molecules, and Grams Worksheet

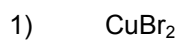
- 1) How many molecules are there in 24 grams of  $\text{FeF}_3$ ?
  
- 2) How many molecules are there in 450 grams of  $\text{Na}_2\text{SO}_4$ ?
  
- 3) How many grams are there in  $2.3 \times 10^{24}$  atoms of silver?
  
- 4) How many grams are there in  $7.4 \times 10^{23}$  molecules of  $\text{AgNO}_3$ ?
  
- 5) How many grams are there in  $7.5 \times 10^{23}$  molecules of  $\text{H}_2\text{SO}_4$ ?
  
- 6) How many molecules are there in 122 grams of  $\text{Cu}(\text{NO}_3)_2$ ?
  
- 7) How many grams are there in  $9.4 \times 10^{25}$  molecules of  $\text{H}_2$ ?
  
- 8) How many molecules are there in 230 grams of  $\text{CoCl}_2$ ?

## Moles, Molecules, and Grams Worksheet

- 9) How many molecules are there in 2.3 grams of  $\text{NH}_4\text{SO}_2$ ?
- 10) How many grams are there in  $3.3 \times 10^{23}$  molecules of  $\text{N}_2\text{I}_6$ ?
- 11) How many molecules are there in 200 grams of  $\text{CCl}_4$ ?
- 12) How many grams are there in  $1 \times 10^{24}$  molecules of  $\text{BCl}_3$ ?
- 13) How many grams are there in  $4.5 \times 10^{22}$  molecules of  $\text{Ba}(\text{NO}_2)_2$ ?
- 14) How many molecules are there in 9.34 grams of  $\text{LiCl}$ ?
- 15) How many grams do  $4.3 \times 10^{21}$  molecules of  $\text{UF}_6$  weigh?
- 16) How many molecules are there in 230 grams of  $\text{NH}_4\text{OH}$ ?

# Percent Composition Worksheet

Find the percent compositions of all of the elements in the following compounds:



Cu: \_\_\_\_\_

Br: \_\_\_\_\_

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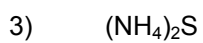


Na: \_\_\_\_\_

O: \_\_\_\_\_

H: \_\_\_\_\_

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N: \_\_\_\_\_

H: \_\_\_\_\_

S: \_\_\_\_\_

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N: \_\_\_\_\_

S: \_\_\_\_\_

## Balancing Chemical Equations

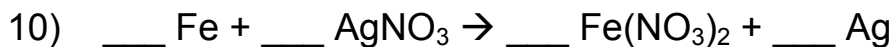
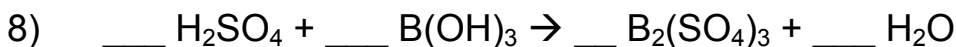
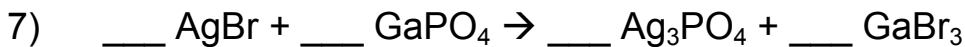
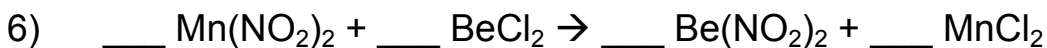
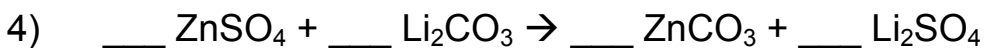
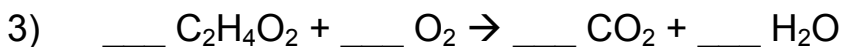
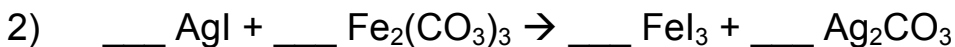
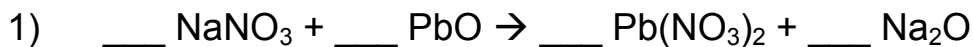
*Balance the equations below:*

- 1)  $\text{___ N}_2 + \text{___ H}_2 \rightarrow \text{___ NH}_3$
- 2)  $\text{___ KClO}_3 \rightarrow \text{___ KCl} + \text{___ O}_2$
- 3)  $\text{___ NaCl} + \text{___ F}_2 \rightarrow \text{___ NaF} + \text{___ Cl}_2$
- 4)  $\text{___ H}_2 + \text{___ O}_2 \rightarrow \text{___ H}_2\text{O}$
- 5)  $\text{___ Pb(OH)}_2 + \text{___ HCl} \rightarrow \text{___ H}_2\text{O} + \text{___ PbCl}_2$
- 6)  $\text{___ AlBr}_3 + \text{___ K}_2\text{SO}_4 \rightarrow \text{___ KBr} + \text{___ Al}_2(\text{SO}_4)_3$
- 7)  $\text{___ CH}_4 + \text{___ O}_2 \rightarrow \text{___ CO}_2 + \text{___ H}_2\text{O}$
- 8)  $\text{___ C}_3\text{H}_8 + \text{___ O}_2 \rightarrow \text{___ CO}_2 + \text{___ H}_2\text{O}$
- 9)  $\text{___ C}_8\text{H}_{18} + \text{___ O}_2 \rightarrow \text{___ CO}_2 + \text{___ H}_2\text{O}$
- 10)  $\text{___ FeCl}_3 + \text{___ NaOH} \rightarrow \text{___ Fe(OH)}_3 + \text{___ NaCl}$
- 11)  $\text{___ P} + \text{___ O}_2 \rightarrow \text{___ P}_2\text{O}_5$
- 12)  $\text{___ Na} + \text{___ H}_2\text{O} \rightarrow \text{___ NaOH} + \text{___ H}_2$
- 13)  $\text{___ Ag}_2\text{O} \rightarrow \text{___ Ag} + \text{___ O}_2$
- 14)  $\text{___ S}_8 + \text{___ O}_2 \rightarrow \text{___ SO}_3$
- 15)  $\text{___ CO}_2 + \text{___ H}_2\text{O} \rightarrow \text{___ C}_6\text{H}_{12}\text{O}_6 + \text{___ O}_2$
- 16)  $\text{___ K} + \text{___ MgBr} \rightarrow \text{___ KBr} + \text{___ Mg}$
- 17)  $\text{___ HCl} + \text{___ CaCO}_3 \rightarrow \text{___ CaCl}_2 + \text{___ H}_2\text{O} + \text{___ CO}_2$
- 18)  $\text{___ HNO}_3 + \text{___ NaHCO}_3 \rightarrow \text{___ NaNO}_3 + \text{___ H}_2\text{O} + \text{___ CO}_2$
- 19)  $\text{___ H}_2\text{O} + \text{___ O}_2 \rightarrow \text{___ H}_2\text{O}_2$
- 20)  $\text{___ NaBr} + \text{___ CaF}_2 \rightarrow \text{___ NaF} + \text{___ CaBr}_2$
- 21)  $\text{___ H}_2\text{SO}_4 + \text{___ NaNO}_2 \rightarrow \text{___ HNO}_2 + \text{___ Na}_2\text{SO}_4$



## Balancing Equations Practice Worksheet

*Balance the following equations:*



## Types of Reactions Worksheet

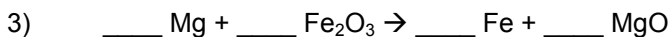
Balance the following equations and indicate the type of reaction taking place:



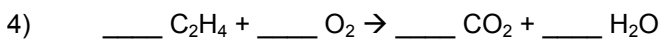
Type of reaction: \_\_\_\_\_



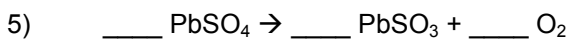
Type of reaction: \_\_\_\_\_



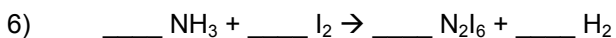
Type of reaction: \_\_\_\_\_



Type of reaction: \_\_\_\_\_



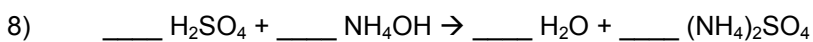
Type of reaction: \_\_\_\_\_



Type of reaction: \_\_\_\_\_



Type of reaction: \_\_\_\_\_



Type of reaction: \_\_\_\_\_

## Solubility Rules Worksheet

1. Classify each of the substances as being soluble or insoluble in water.

- |   |                        |
|---|------------------------|
| a. potassium bromide – <b>soluble</b>     | i. silver acetate      |
| b. lead (II) carbonate – <b>insoluble</b> | j. copper (II) sulfide |
| c. barium sulfate                         | k. $Mg_3(PO_4)_2$      |
| d. zinc hydroxide                         | l. KOH                 |
| e. sodium acetate                         | m. $NiCl_2$            |
| f. silver iodide                          | n. $NH_4OH$            |
| g. cadmium (II) sulfide                   | o. $Hg_2SO_4$          |
| h. zinc carbonate                         | p. $PbI_2$             |

2. Identify the two new products which form if the solutions, as suggested by the following table, were mixed. CIRCLE the names of the compounds which would precipitate from the solutions, which are not soluble and would make a solid.

	KBr	Na <sub>2</sub> CO <sub>3</sub>	CaS	NH <sub>4</sub> OH
AgNO <sub>3</sub>	<b>AgBr</b> + KNO <sub>3</sub>			
BaCl <sub>2</sub>				
Al(NO <sub>3</sub> ) <sub>3</sub>				
CuSO <sub>4</sub>				

# Precipitation Reactions

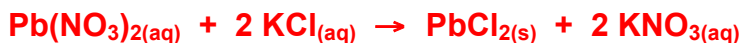
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Write balanced equations. Predict what the products will be. If a product is soluble write (aq) after it. If a product is NOT soluble, write (s) after it. All reactants listed below are soluble (that's why they are called solutions).

Write (aq) after each reactant.

Note: gas (g), liquid (l), solid (s), aqueous (aq)

1. Solutions of lead nitrate and potassium chloride are mixed.



2. Solutions of sodium sulfate and calcium bromide are mixed.

3. Solutions of aluminum acetate and lithium hydroxide are mixed.

4. Solutions of iron(III) sulfate and sodium sulfide are mixed.

5. Solutions of aluminum sulfate and calcium hydroxide are mixed.

6. Solutions of potassium chromate and lead acetate are mixed.

7. Solutions of silver nitrate and ammonium sulfide are mixed.

## Naming Ionic Compounds Practice Worksheet

*Name the following ionic compounds:*

- 1)  $\text{NH}_4\text{Cl}$  \_\_\_\_\_
- 2)  $\text{Fe}(\text{NO}_3)_3$  \_\_\_\_\_
- 3)  $\text{TiBr}_3$  \_\_\_\_\_
- 4)  $\text{Cu}_3\text{P}$  \_\_\_\_\_
- 5)  $\text{SnSe}_2$  \_\_\_\_\_
- 6)  $\text{GaAs}$  \_\_\_\_\_
- 7)  $\text{Pb}(\text{SO}_4)_2$  \_\_\_\_\_
- 8)  $\text{Be}(\text{HCO}_3)_2$  \_\_\_\_\_
- 9)  $\text{Mn}_2(\text{SO}_3)_3$  \_\_\_\_\_
- 10)  $\text{Al}(\text{CN})_3$  \_\_\_\_\_

*Write the formulas for the following compounds:*

- 11) chromium (VI) phosphate \_\_\_\_\_
- 12) vanadium (IV) carbonate \_\_\_\_\_
- 13) tin (II) nitrite \_\_\_\_\_
- 14) cobalt (III) oxide \_\_\_\_\_
- 15) titanium (II) acetate \_\_\_\_\_
- 16) vanadium (V) sulfide \_\_\_\_\_
- 17) chromium (III) hydroxide \_\_\_\_\_
- 18) lithium iodide \_\_\_\_\_
- 19) lead (II) nitride \_\_\_\_\_
- 20) silver bromide \_\_\_\_\_

## Lots of Ionic Naming Practice Problems

Name the following ionic compounds:

- 1) NaBr \_\_\_\_\_
- 2) Sc(OH)<sub>3</sub> \_\_\_\_\_
- 3) V<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub> \_\_\_\_\_
- 4) NH<sub>4</sub>F \_\_\_\_\_
- 5) CaCO<sub>3</sub> \_\_\_\_\_
- 6) NiPO<sub>4</sub> \_\_\_\_\_
- 7) Li<sub>2</sub>SO<sub>3</sub> \_\_\_\_\_
- 8) Zn<sub>3</sub>P<sub>2</sub> \_\_\_\_\_
- 9) Sr(C<sub>2</sub>H<sub>3</sub>O<sub>2</sub>)<sub>2</sub> \_\_\_\_\_
- 10) Cu<sub>2</sub>O \_\_\_\_\_
- 11) Ag<sub>3</sub>PO<sub>4</sub> \_\_\_\_\_
- 12) YClO<sub>3</sub> \_\_\_\_\_
- 13) SnS<sub>2</sub> \_\_\_\_\_
- 14) Ti(CN)<sub>4</sub> \_\_\_\_\_
- 15) KMnO<sub>4</sub> \_\_\_\_\_
- 16) Pb<sub>3</sub>N<sub>2</sub> \_\_\_\_\_
- 17) CoCO<sub>3</sub> \_\_\_\_\_
- 18) CdSO<sub>3</sub> \_\_\_\_\_
- 19) Cu(NO<sub>2</sub>)<sub>2</sub> \_\_\_\_\_
- 20) Fe(HCO<sub>3</sub>)<sub>2</sub> \_\_\_\_\_

## Lots of Ionic Naming Practice Problems

Write the formulas for the following ionic compounds:

- 21) lithium acetate \_\_\_\_\_
- 22) iron (II) phosphate \_\_\_\_\_
- 23) titanium (II) selenide \_\_\_\_\_
- 24) calcium bromide \_\_\_\_\_
- 25) gallium chloride \_\_\_\_\_
- 26) sodium hydride \_\_\_\_\_
- 27) beryllium hydroxide \_\_\_\_\_
- 28) zinc carbonate \_\_\_\_\_
- 29) manganese (VII) arsenide \_\_\_\_\_
- 30) copper (II) chlorate \_\_\_\_\_
- 31) cobalt (III) chromate \_\_\_\_\_
- 32) ammonium oxide \_\_\_\_\_
- 33) potassium hydroxide \_\_\_\_\_
- 34) lead (IV) sulfate \_\_\_\_\_
- 35) silver cyanide \_\_\_\_\_
- 36) vanadium (V) nitride \_\_\_\_\_
- 37) strontium acetate \_\_\_\_\_
- 38) molybdenum sulfate \_\_\_\_\_
- 39) platinum (II) sulfide \_\_\_\_\_
- 40) ammonium sulfate \_\_\_\_\_

## Compound Names and Formulas

For the list on the left, name the compound. For the list on the right, give the chemical formula that corresponds to the name

Name		Formula	
1)	NaF	13)	potassium fluoride
2)	K <sub>2</sub> CO <sub>3</sub>	14)	ammonium sulfate
3)	MgCl <sub>2</sub>	15)	magnesium iodide
4)	Be(OH) <sub>2</sub>	16)	copper (II) sulfite
5)	SrS	17)	aluminum phosphate
6)	Cu <sub>2</sub> S	18)	lead (II) nitrite
7)	ZnI <sub>2</sub>	19)	cobalt (II) selenide
8)	Ca <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub>	20)	silver cyanide
9)	NH <sub>4</sub> I	21)	copper (II) bicarbonate
10)	Mn(NO <sub>3</sub> ) <sub>3</sub>	22)	iron (II) oxide
11)	FePO <sub>4</sub>	23)	lithium cyanide
12)	CoCO <sub>3</sub>	24)	lead (IV) sulfite



## Naming Covalent Compounds Worksheet

Write the formulas for the following covalent compounds:

- 1) antimony tribromide \_\_\_\_\_
- 2) hexaboron silicide \_\_\_\_\_
- 3) chlorine dioxide \_\_\_\_\_
- 4) hydrogen iodide \_\_\_\_\_
- 5) iodine pentafluoride \_\_\_\_\_
- 6) dinitrogen trioxide \_\_\_\_\_
- 7) ammonia \_\_\_\_\_
- 8) phosphorus triiodide \_\_\_\_\_

Write the names for the following covalent compounds:

- 9)  $P_4S_5$  \_\_\_\_\_
- 10)  $O_2$  \_\_\_\_\_
- 11)  $SeF_6$  \_\_\_\_\_
- 12)  $Si_2Br_6$  \_\_\_\_\_
- 13)  $SCl_4$  \_\_\_\_\_
- 14)  $CH_4$  \_\_\_\_\_
- 15)  $B_2Si$  \_\_\_\_\_
- 16)  $NF_3$  \_\_\_\_\_

## Naming compounds and molar masses

*Answers are provided on the second sheet. Please try to do the worksheet without referring to them, because you'll be expected to know this stuff the first day of school!*

Name each of the following chemical compounds and list their molar masses to the nearest g/mol:

- 1)  $\text{AgNO}_3$
- 2)  $\text{PbSO}_4$
- 3)  $\text{N}_2\text{O}_3$
- 4)  $\text{CoCl}_2 \cdot 4 \text{H}_2\text{O}$
- 5)  $\text{NH}_3$
- 6)  $\text{PBr}_3$
- 7)  $\text{B}_2\text{F}_6$
- 8)  $\text{Sn}(\text{CO}_3)_2$

Write the formulas of each of the following chemical compounds and list their molar masses to the nearest g/mol:

- 9) lithium acetate
- 10) copper (I) oxide
- 11) ammonium phosphate
- 12) vanadium (V) cyanide
- 13) nitrogen tribromide
- 14) iron (II) fluoride tetrahydrate
- 15) sulfur hexachloride
- 16) platinum (IV) hydroxide

## Word Equations Worksheet

*Write the word equations for each of the following chemical reactions:*

- 1) When dissolved beryllium chloride reacts with dissolved silver nitrate in water, aqueous beryllium nitrate and silver chloride powder are made.
  
- 2) When isopropanol ( $C_3H_8O$ ) burns in oxygen, carbon dioxide, water, and heat are produced.
  
- 3) When dissolved sodium hydroxide reacts with sulfuric acid ( $H_2SO_4$ ), aqueous sodium sulfate, water, and heat are formed.
  
- 4) When fluorine gas is put into contact with calcium metal at high temperatures, calcium fluoride powder is created in an exothermic reaction.
  
- 5) When sodium metal reacts with iron (II) chloride, iron metal and sodium chloride are formed.