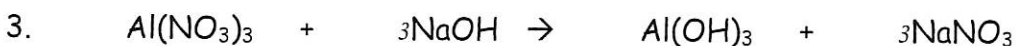
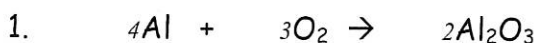
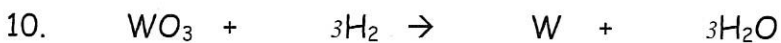
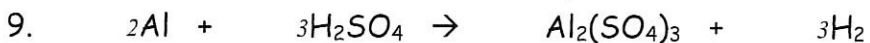
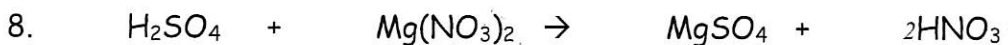
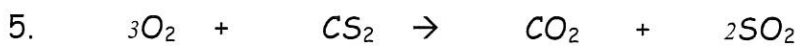


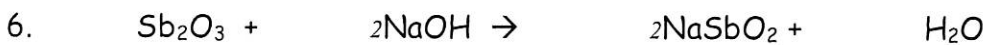
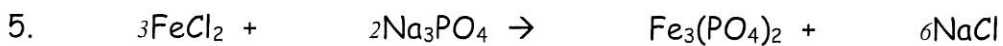
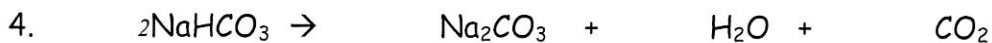
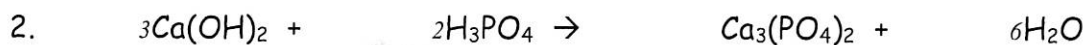
**I. Fill in the blanks with the most appropriate term:**

A chemical equation tells the story of a chemical reaction. Reactants are the starting substances in the reaction while products are the new substances that are formed. The large numbers in front of some of the formulas are called coefficients. These numbers are used to balance the equation because chemical reactions must obey the Law of Conservation of Matter. The number of atoms of each element on both sides of the equation must be equal because matter cannot be created or destroyed. When balancing equations, the only numbers that can be changed are coefficients; remember that formulas / subscripts must never be changed in order to balance an equation.

**II. Balance the following equations:**



Balance the following equations.

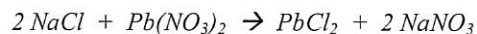


## Worksheet: Word Equations

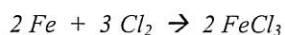
Name \_\_\_\_\_

Substitute symbols and formulas for words, then balance each equation.

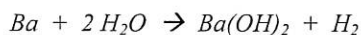
1. sodium chloride + lead (II) nitrate → lead (II) chloride + sodium nitrate



2. iron + chlorine → iron (III) chloride



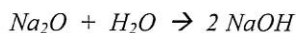
3. barium + water → barium hydroxide + hydrogen



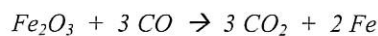
4. When chlorine gas reacts with methane, carbon tetrachloride and hydrogen chloride are produced.



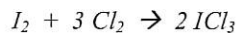
5. When sodium oxide is added to water, sodium hydroxide is produced.



6. In a blast furnace, iron (III) oxide and carbon monoxide gas produce carbon dioxide gas and iron.



7. Iodine crystals react with chlorine gas to produce iodine trichloride.



# CHEMISTRY - CHAPTER 3: EQUATIONS

KEY

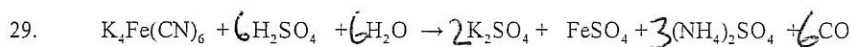
## BALANCING EQUATIONS: FORMULAS GIVEN

Practice Sheet #1

Balance the following equations:

1.  $2\text{Al} + \text{N}_2 \rightarrow 2\text{AlN}$
2.  $3\text{Fe} + 2\text{O}_2 \rightarrow \text{Fe}_3\text{O}_4$
3.  $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2$
4.  $\text{NH}_4\text{NO}_3 \rightarrow \text{N}_2\text{O} + 2\text{H}_2\text{O}$
5.  $2\text{KI} + \text{Cl}_2 \rightarrow 2\text{KCl} + \text{I}_2$
6.  $\text{Pb}(\text{NO}_3)_2 + 2\text{HCl} \rightarrow \text{PbCl}_2 + 2\text{HNO}_3$
7.  $2\text{BaO}_2 \rightarrow 2\text{BaO} + \text{O}_2$
8.  $2\text{Al} + 3\text{H}_2\text{SO}_4 \rightarrow \text{Al}_2(\text{SO}_4)_3 + 3\text{H}_2$
9.  $\text{CH}_4 + 3\text{Cl}_2 \rightarrow \text{CHCl}_3 + 3\text{HCl}$
10.  $\text{MgCl}_2 + 2\text{NaOH} \rightarrow \text{Mg}(\text{OH})_2 + 2\text{NaCl}$
11.  $2\text{AgNO}_3 + \text{CuCl}_2 \rightarrow 2\text{AgCl} + \text{Cu}(\text{NO}_3)_2$
12.  $2\text{ZnS} + 3\text{O}_2 \rightarrow 2\text{ZnO} + 2\text{SO}_2$
13.  $2\text{Na} + 2\text{H}_2\text{O} \rightarrow \text{H}_2 + 2\text{NaOH}$
14.  $\text{BaCl}_2 + (\text{NH}_4)_2\text{CO}_3 \rightarrow \text{BaCO}_3 + 2\text{NH}_4\text{Cl}$
15.  $2\text{C}_6\text{H}_6 + 15\text{O}_2 \rightarrow 12\text{CO}_2 + 6\text{H}_2\text{O}$
16.  $2\text{Na} + 2\text{H}_2\text{O} \rightarrow 2\text{NaOH} + \text{H}_2$
17.  $\text{Fe} + 2\text{FeCl}_3 \rightarrow 3\text{FeCl}_2$
18.  $3\text{Ba}(\text{OH})_2 + 2\text{AlCl}_3 \rightarrow 2\text{Al}(\text{OH})_3 + 3\text{BaCl}_2$
19.  $\text{H}_2\text{C}_2\text{O}_4 + 2\text{KOH} \rightarrow \text{K}_2\text{C}_2\text{O}_4 + 2\text{H}_2\text{O}$
20.  $2\text{C}_2\text{H}_2\text{Cl}_4 + \text{Ca}(\text{OH})_2 \rightarrow 2\text{C}_2\text{HCl}_3 + \text{CaCl}_2 + 2\text{H}_2\text{O}$
21.  $(\text{NH}_4)_2\text{Cr}_2\text{O}_7 \rightarrow \text{N}_2 + \text{Cr}_2\text{O}_3 + 4\text{H}_2\text{O}$
22.  $\text{Zn}_3\text{Sb}_2 + 6\text{H}_2\text{O} \rightarrow 3\text{Zn}(\text{OH})_2 + 2\text{SbH}_3$
23.  $12\text{HClO}_4 + \text{P}_4\text{O}_{10} \rightarrow 4\text{H}_3\text{PO}_4 + 6\text{Cl}_2\text{O}_7$
24.  $4\text{C}_6\text{H}_5\text{Cl} + \text{SiCl}_4 + 8\text{Na} \rightarrow (\text{C}_6\text{H}_5)_4\text{Si} + 8\text{NaCl}$
25.  $\text{Sb}_2\text{S}_3 + 12\text{HCl} \rightarrow 2\text{H}_3\text{SbCl}_6 + 3\text{H}_2\text{S}$
26.  $3\text{IBr} + 4\text{NH}_3 \rightarrow \text{NI}_3 + 3\text{NH}_4\text{Br}$
27.  $2\text{KrF}_2 + 2\text{H}_2\text{O} \rightarrow 2\text{Kr} + \text{O}_2 + 4\text{HF}$

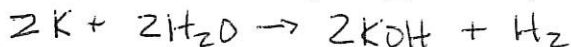
# CHEMISTRY - CHAPTER 3: EQUATIONS



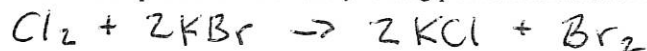
## BALANCING CHEMICAL EQUATIONS - NAMES GIVEN

Practice Sheet #2

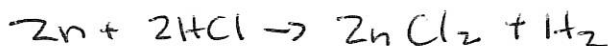
1. Potassium reacts with water yielding potassium hydroxide and hydrogen



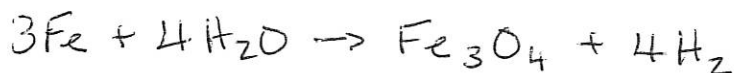
2. Chlorine reacts with potassium bromide yielding potassium chloride and bromine



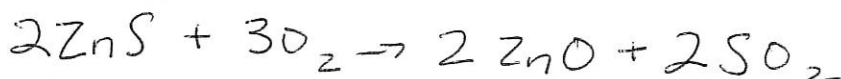
3. Zinc + hydrogen chloride yields zinc chloride and hydrogen



4. iron + water  $\rightarrow \text{Fe}_3\text{O}_4$  + hydrogen



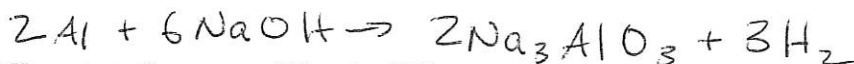
5. zinc sulfide + oxygen  $\rightarrow$  zinc oxide + sulfur dioxide



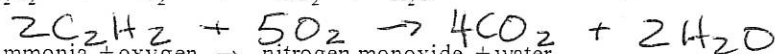
6.  $\text{C}_{10}\text{H}_{16} + \text{Cl}_2 \rightarrow \text{C} + \text{HCl}$



7. Aluminum + sodium hydroxide  $\rightarrow \text{Na}_3\text{AlO}_3$  + hydrogen



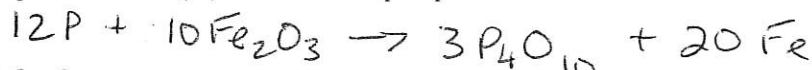
8.  $\text{C}_2\text{H}_2 + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$



9. Ammonia + oxygen  $\rightarrow$  nitrogen monoxide + water



10. Phosphorus + iron(III) oxide  $\rightarrow$  tetra-phosphorus decoxide + iron

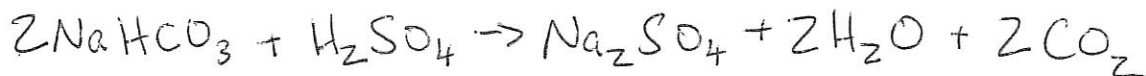


EVS

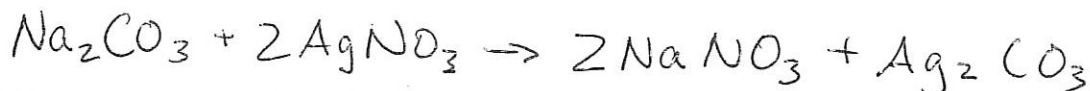
11. Cupric sulfide + oxygen  $\rightarrow$  copper(I) oxide + sulfur dioxide



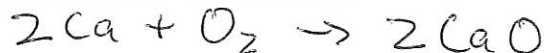
12. sodium bicarbonate + hydrogen sulfate  $\rightarrow$  sodium sulfate + water + carbon dioxide



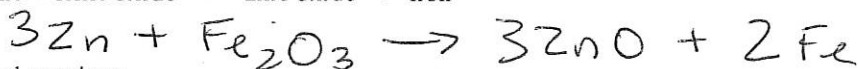
13. Sodium carbonate + silver nitrate  $\rightarrow$  sodium nitrate + silver carbonate



14. Calcium + oxygen  $\rightarrow$  calcium oxide

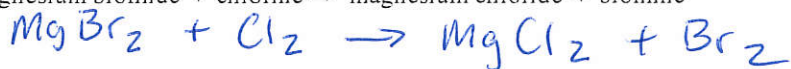


15. Zinc +  <sup>$\text{Fe}_2\text{O}_3$</sup>  ferric oxide  $\rightarrow$  zinc oxide + iron



# CHEMISTRY - CHAPTER 3: EQUATIONS

16. Magnesium bromide + chlorine → magnesium chloride + bromine



17. Sodium + water → sodium hydroxide + hydrogen



18. Potassium nitrate → potassium nitrite + oxygen



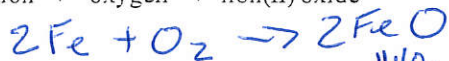
19. Calcium oxide + hydrochloric acid → calcium chloride + water



- ~~ERROR 20. Magnesium + oxygen → magnesium oxide~~



21. Iron + oxygen → iron(II) oxide



22. Water + dinitrogen trioxide → <sup>HNO<sub>2</sub></sup> nitrous acid



23. Sodium oxide + water → sodium hydroxide



24. Iron(III) oxide + carbon monoxide → iron + carbon dioxide



25. Methane (CH<sub>4</sub>) + oxygen → carbon dioxide + water

