

Practice Problems (Chapter 5): Balancing and Reactions

CHEM 30A

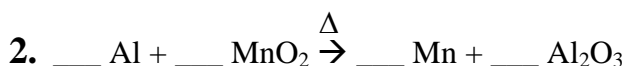
I suggest that you complete these practice problems in **pencil** because you may need to erase and change coefficients as you balance the chemical equations.

Balance the following equations (show your check), and answer the accompanying questions.



What type of reaction is this? (circle one)

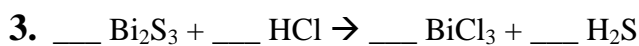
combination, decomposition, single replacement, double replacement, combustion, acid-base



What does the delta symbol (triangle) over the arrow mean? _____

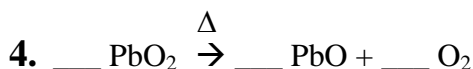
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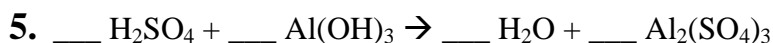
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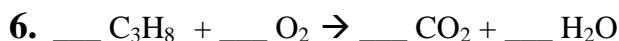
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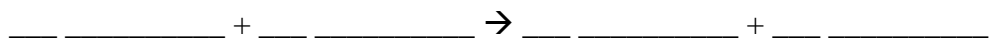


What type of reaction is this? (circle one)

combination, decomposition, single replacement, double replacement, combustion, acid-base

Write formula equations from the following word equations, then balance them (show your check).

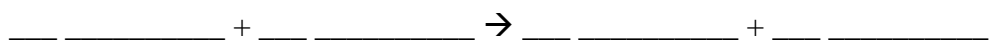
7. phosphoric acid + calcium hydroxide \rightarrow calcium phosphate + water



8. zinc carbonate + hydrochloric acid \rightarrow zinc chloride + water + carbon dioxide



9. silver nitrate + aluminum chloride \rightarrow silver chloride + aluminum nitrate



10. silver oxide $\xrightarrow{\Delta}$ silver + oxygen



Predict the products for the following combination reactions and balance them (show your check). The product of each reaction is a charge neutral ionic compound.

11. _____ Mg_(s) + _____ O_{2(g)} \rightarrow

12. _____ Al_(s) + _____ Br_{2(l)} \rightarrow

Predict the products for the following single replacement reactions and balance them (show your check). If no reaction occurs, write "no reaction" on the product side of the arrow.

13. _____ Cu_(s) + _____ FeCl_{3(aq)} \rightarrow


14. _____ Al_(s) + _____ HBr_(aq) \rightarrow

15. _____ H_{2(g)} + _____ Al₂O_{3(aq)} \rightarrow

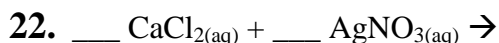
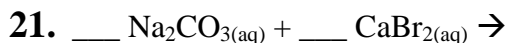
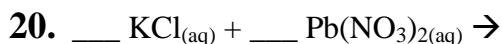
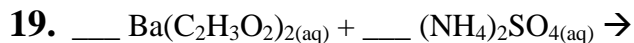
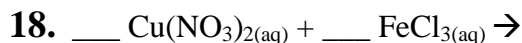
16. _____ Cl_{2(g)} + _____ HBr_(aq) \rightarrow

17. _____ I_{2(s)} + _____ HCl_(aq) \rightarrow

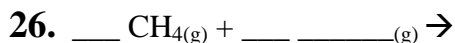
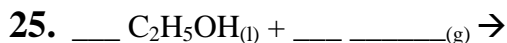
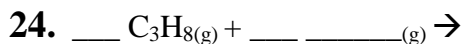
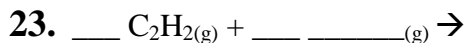
Activity Series:

Metals (and Hydrogen) form cations		Non-Metals (Halogens) form anions
K		F ₂
Ca		Cl ₂
Na		Br ₂
Mg		I ₂
Al		
Zn		
Fe		
Ni		
Sn		
Pb		
H		
Cu		
Ag		
Hg		
Au		

Predict the products for the following double replacement reactions and balance them (show your check). Use the solubility rules to determine if a precipitate (solid) will form. Label the phase of insoluble products as solid and soluble products as aqueous.



Complete the following combustion reactions (in air) and balance them (show your check).



Predict the products for the following acid-base neutralization reactions and balance them (show your check).

