

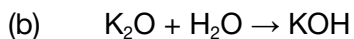
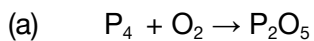
**Chemistry 2202**  
**Chapter 4: Review Sheet**

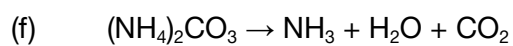
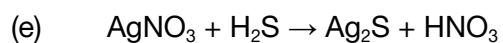
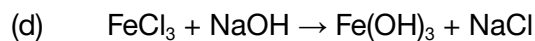
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1. Write the chemical formula for each of the compounds. Predict the solubility of these compounds in water:

- (a) lead(II) sulfate (in car batteries)
- (b) ammonium phosphate (fertilizer)
- (c) calcium sulfate (a component of drywall)
- (d) aluminum sulfate (used in water purification)
- (e) calcium phosphate (in bones)
- (f) barium sulfate (used during stomach X-rays)
- (g) ammonium carbonate (smelling salts)
- (h) calcium carbonate (in shells)

2. Rewrite the equation and balance it in the space provided. Provide states when possible.



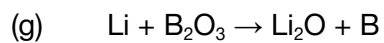
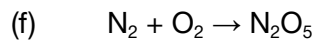
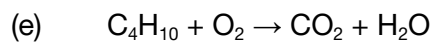
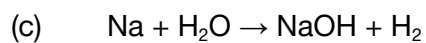
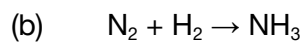
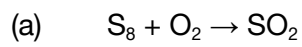


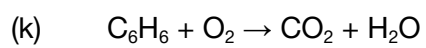
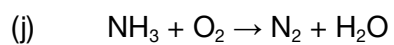
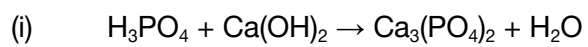
3. Nitrogen dioxide,  $\text{NO}_2$ , is an air pollutant formed from automobile exhaust. This toxic gas can be prepared in the laboratory by adding copper metal to a solution of nitric acid,  $\text{HNO}_3(\text{aq})$ . The other reaction products are water and a solution of copper(II) nitrate.

(a) Write a word equation for this reaction.

(b) Write a balanced chemical equation, including all state symbols.

4. Rewrite and balance the chemical equations of the reactions.  
Indicate the state of each compound.



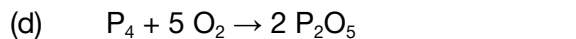
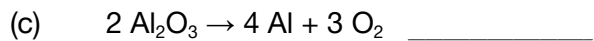
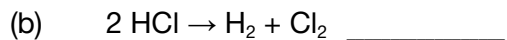
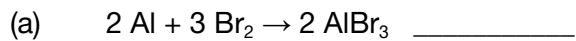


5. Write the balanced chemical equation for the reaction of these pairs of reactants:

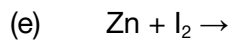
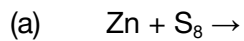
(a) calcium and bromine

(b) aluminum and oxygen

6. Classify these reactions as formation (F) or decomposition (D).



7. Predict the products of these formation or simple decomposition reactions. Write a balanced chemical equation to represent each reaction. Include states where applicable.



8. Write a balanced chemical equation for each of these reactions.

Provide states when possible:

(a) Aluminum metal readily reacts in air to form a hard protective coating of aluminum oxide.

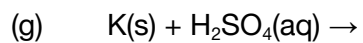
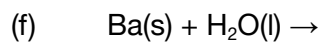
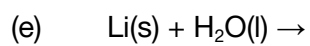
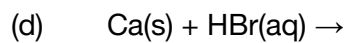
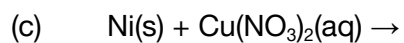
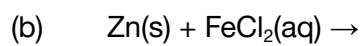
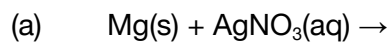
(b) Copper(II) oxide and carbon dioxide are produced when copper(II) carbonate is heated.

(c) Solid nitrogen triiodide is a shock-sensitive explosive that is stable when wet and explosive when dry. This compound decomposes rapidly to produce a gas when detonated.

9. The simple decomposition of solid sodium azide,  $\text{NaN}_3$ , is the chemical reaction that inflates automobile airbags during a collision.

Write a chemical equation for this reaction. Include states of matter for reactants and products.

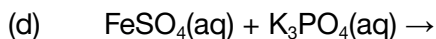
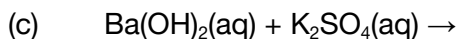
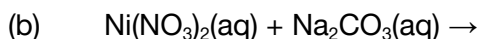
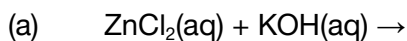
10. Rewrite, balance and complete the chemical equations of the reactions. Indicate the state of each compound.



11. Classify the reactions represented by these equations as either single (SR) or double Replacement (DR):



12. Rewrite, balance and complete the chemical equations of the reactions. Indicate the state of each compound.



13. Cylinders of butane,  $\text{C}_4\text{H}_{10}$ , are used in some types of camping stoves. The butane in these cylinders is liquid because it is under pressure. When the stove is turned on, butane leaves the cylinder and quickly evaporates before it ignites.

Write the chemical equation for the complete combustion of butane. (include states)



14. Write dissociation equations for each of the compounds:  
Remember, the compounds are solid to begin with, at room temperature.  
They will dissociate if they are (aq) on the solubility table.

(a) Calcium nitrate

(b) Aluminum nitrate

(c) Iron (II) chloride

15. Write the non-ionic, total ionic and net ionic equation for each of the reactions.

- a. Silver nitrate react with magnesium iodide

Non-ionic:

Total ionic:

Net ionic:

- b. Lithium hydroxide reacts with magnesium iodide

Non-ionic:

Total ionic:

Net ionic: