

Chemistry Review #2  
Balancing Equations, Types of Reactions, and Acids and Bases

**True/False**

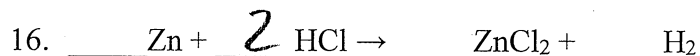
1. In a neutralization reaction, an acid is added to a base to produce a salt and water. T
2. A single displacement reaction occurs when an element and a compound react, producing a new element and compound. T
3. Hydrochloric acid is the acid used in car batteries. F (sulfuric acid)
4. A neutralization reaction is an example of a double displacement reaction. T
5. Most cleaning products are bases. T

**Fill in the blanks.**

6. The products of a combustion reaction are always CO<sub>2</sub> and H<sub>2</sub>O.
7. Acids taste sour. Bases taste bitter.
8. Acids have a pH of < 7 and bases have a pH of > 7.

**Balance the following chemical equations and classify each reaction as: synthesis, decomposition, single displacement, double displacement, neutralization, or combustion.**

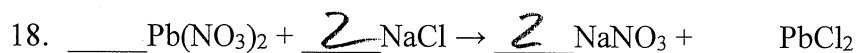
- |  | Type of Reaction           |
|--|----------------------------|
| 9. <u>2</u> K + <u>    </u> Br <sub>2</sub> → <u>2</u> KBr   | <u>Synthesis</u>           |
| 10. <u>    </u> SiO <sub>2</sub> + <u>4</u> HF → <u>    </u> SiF <sub>4</sub> + <u>2</u> H <sub>2</sub> O  | <u>double displacement</u> |
| 11. <u>    </u> Al <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub> + <u>3</u> Ca(OH) <sub>2</sub> → <u>2</u> Al(OH) <sub>3</sub> + <u>3</u> CaSO <sub>4</sub> | <u>double displacement</u> |
| 12. <u>    </u> Au <sub>2</sub> S <sub>3</sub> + <u>3</u> H <sub>2</sub> → <u>2</u> Au + <u>3</u> H <sub>2</sub> S   | <u>single displacement</u> |
| 13. <u>2</u> C <sub>7</sub> H <sub>6</sub> O <sub>2</sub> + <u>15</u> O <sub>2</sub> → <u>14</u> CO <sub>2</sub> + <u>6</u> H <sub>2</sub> O               | <u>combustion</u>          |
| 14. <u>    </u> C <sub>2</sub> H <sub>5</sub> OH + <u>3</u> O <sub>2</sub> → <u>2</u> CO <sub>2</sub> + <u>3</u> H <sub>2</sub> O                          | <u>combustion</u>          |
| 15. <u>2</u> H <sub>3</sub> PO <sub>4</sub> → <u>    </u> H <sub>4</sub> P <sub>2</sub> O <sub>7</sub> + <u>    </u> H <sub>2</sub> O                      | <u>decomposition</u>       |



Single displacement



Synthesis



Double displacement

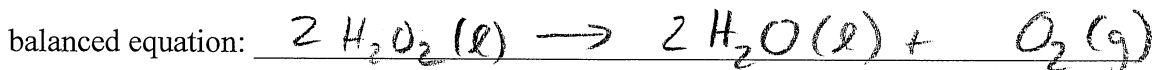
**Write a balanced chemical equation using chemical symbols and states of matter for each of the following word equations. Classify each reaction as: synthesis, decomposition, single displacement, double displacement, neutralization, or combustion.**

19. Iron metal and chlorine gas react to form solid iron(III) chloride.



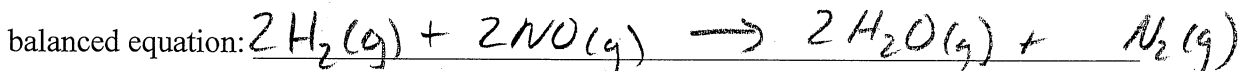
type of reaction: Synthesis

20. Liquid hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>) breaks down into liquid water and oxygen gas.



type of reaction: decomposition

21. Hydrogen gas and nitrogen monoxide gas react to form water vapor and nitrogen gas.



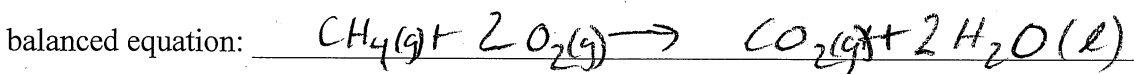
type of reaction: Single displacement

22. Aqueous potassium iodide reacts with aqueous lead(II) nitrate to form aqueous potassium nitrate and solid lead(II) iodide.



type of reaction: double displacement

23. Methane gas, CH<sub>4</sub>, is burned.



type of reaction: Combustion