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_2 and H_2O.
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. $2\ K + \_\_\_\ Br_2 \rightarrow 2\ KBr$	Synthesis
10. $\_\_\_\ SiO_2 + 4\ HF \rightarrow \_\_\_\ SiF_4 + 2\ H_2O$	double displacement
11. $\_\_\_\ Al_2(SO_4)_3 + 3\ Ca(OH)_2 \rightarrow 2\ Al(OH)_3 + 3\ CaSO_4$	double displacement
12. $\_\_\_\ Au_2S_3 + 3\ H_2 \rightarrow 2\ Au + 3\ H_2S$	Single displacement
13. $2\ C_7H_6O_2 + 15\ O_2 \rightarrow 14\ CO_2 + 6\ H_2O$	Combustion
14. $\_\_\_\ C_2H_5OH + 3\ O_2 \rightarrow 2\ CO_2 + 3\ H_2O$	combustion
15. $2\ H_3PO_4 \rightarrow \_\_\_\ H_4P_2O_7 + \_\_\_\ H_2O$	decomposition

16. ____Zn + 2 HCl → ____$ZnCl_2$ + ____H_2 — Single displacement

17. 2 H_2 + ____O_2 → 2 H_2O — Synthesis

18. ____$Pb(NO_3)_2$ + 2 NaCl → 2 $NaNO_3$ + ____$PbCl_2$ — 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.

balanced equation: $2Fe(s) + 3Cl_2(g) \rightarrow 2FeCl_3(s)$

type of reaction: Synthesis

20. Liquid hydrogen peroxide (H_2O_2) breaks down into liquid water and oxygen gas.

balanced equation: $2H_2O_2(\ell) \rightarrow 2H_2O(\ell) + O_2(g)$

type of reaction: decomposition

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

balanced equation: $2H_2(g) + 2NO(g) \rightarrow 2H_2O(g) + N_2(g)$

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.

balanced equation: $2KI(aq) + Pb(NO_3)_2(aq) + 2KNO_3(aq) + PbI_2(s)$

type of reaction: double displacement

23. Methane gas, CH_4, is burned.

balanced equation: $CH_4(g) + 2O_2(g) \rightarrow CO_2(g) + 2H_2O(\ell)$

type of reaction: Combustion