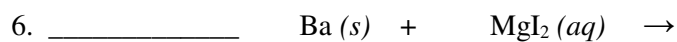
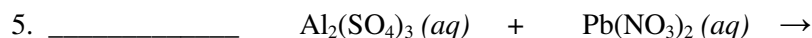
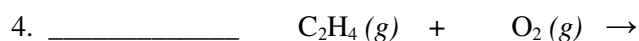
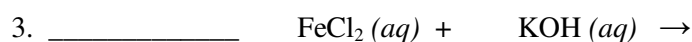
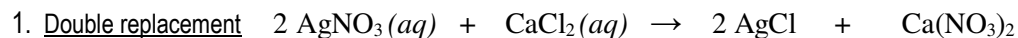
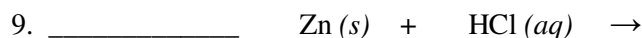


Predicting Products of Chemical reactions

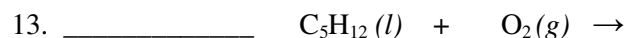
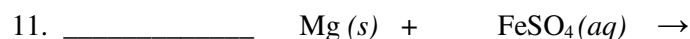
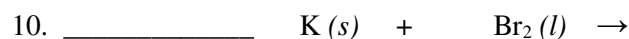
For the following, you should (a) determine the type of reaction. (Suggested answers are: single replacement, double replacement, combination (or synthesis), decomposition, and combustion.) (b) Predict the correct products. (c) Balance the reaction. The first equation is done for you as an example. At this point, do not worry about the (s), (l), (g), and (aq) states. Remember to first write the products with the correct formulas. When writing a product that is ionic, determine the correct ratio of the positive ion to the negative ion to form a neutral compound and indicate that with subscripts. Then balance the equation using only coefficients. The answers are on the following page.



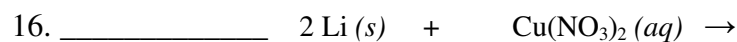
(Hint: Remember the reaction with $\text{Cu}(\text{OH})_2$ in the copper lab exercise. What happened then?)



(Zinc forms a 2+ ion.)



(Hint: H_2CO_3 is the weak acid that is in soda pop that gives pop its fizz. What is the fizz?)



Answers

1. Double replacement $2 \text{AgNO}_3(aq) + \text{CaCl}_2(aq) \rightarrow 2 \text{AgCl} + \text{Ca(NO}_3)_2$
2. Combination $2 \text{Al}(s) + 3 \text{Cl}_2(g) \rightarrow 2 \text{AlCl}_3$
3. Double replacement $\text{FeCl}_2(aq) + 2 \text{KOH}(aq) \rightarrow \text{Fe(OH)}_2 + 2 \text{KCl}$
4. Combustion $\text{C}_2\text{H}_4(g) + 3 \text{O}_2(g) \rightarrow 2 \text{CO}_2 + 2 \text{H}_2\text{O}$
5. Double replacement $\text{Al}_2(\text{SO}_4)_3(aq) + 3 \text{Pb}(\text{NO}_3)_2(aq) \rightarrow 2 \text{Al}(\text{NO}_3)_3 + 3 \text{PbSO}_4$
6. Single replacement $\text{Ba}(s) + \text{MgI}_2(aq) \rightarrow \text{BaI}_2 + \text{Mg}$
7. Decomposition $\text{Ca(OH)}_2(s) + \text{heat} \rightarrow \text{CaO} + \text{H}_2\text{O}$
8. Double replacement $\text{H}_2\text{SO}_4(aq) + 2 \text{KOH}(aq) \rightarrow \text{K}_2\text{SO}_4 + 2 \text{H}_2\text{O}$
9. Single replacement $\text{Zn}(s) + 2 \text{HCl}(aq) \rightarrow \text{ZnCl}_2 + \text{H}_2$
10. Combination $2 \text{K}(s) + \text{Br}_2(l) \rightarrow 2 \text{KBr}$
11. Single replacement $\text{Mg}(s) + \text{FeSO}_4(aq) \rightarrow \text{MgSO}_4 + \text{Fe}$
12. Double replacement $\text{NaOH}(aq) + \text{HCl}(aq) \rightarrow \text{NaCl} + \text{H}_2\text{O}$
13. Combustion $\text{C}_5\text{H}_{12}(l) + 8 \text{O}_2(g) \rightarrow 5 \text{CO}_2 + 6 \text{H}_2\text{O}$
14. Decomposition $\text{H}_2\text{CO}_3(aq) \rightarrow \text{CO}_2 + \text{H}_2\text{O}$
15. Combination $2 \text{Ca}(s) + \text{O}_2(g) \rightarrow 2 \text{CaO}$
16. Single replacement $2 \text{Li}(s) + \text{Cu}(\text{NO}_3)_2(aq) \rightarrow \text{Cu} + 2 \text{LiNO}_3$