

More Chemical Reactions

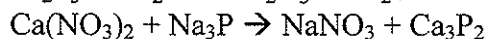
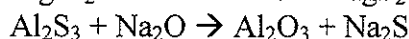
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Information: Double Replacement Reactions

In the previous ChemQuest, you learned about single replacement reactions in which a single atom replaces an ion from another reactant. Study what happens in the following reactions. They are called double replacement reactions.



Critical Thinking Questions

1. What is the difference between single replacement reactions and double replacement reactions?
2. Complete the following reactions by providing the formulas for the missing compound(s).



3. Name the two products in the reaction between calcium phosphate and sodium iodide.



4. Explain why when you mix the following reactants, no reaction occurs:
 $\text{Na}_2\text{SO}_4 + \text{NaCl} \rightarrow$

they both contain sodium so the products wouldn't be any different.

Information: Combustion Reactions

Another type of reaction is a combustion reaction. During combustion, a hydrocarbon reacts with oxygen. The products for complete combustion are always the same—water and carbon dioxide and energy. The following equation is an example of the combustion of a hydrocarbon.



Critical Thinking Questions

5. Complete the following reactions by supplying the missing compound in each blank.



6. Write a combustion reaction for C_5H_{10} .



Information: Synthesis and Decomposition Reactions

Two other types of reactions are synthesis and decomposition. During a synthesis reaction, several reactants combine to make a single product. During a decomposition, one reactant *decomposes* into two or more products. The following table shows some examples of these types of reactions.

Synthesis	Decomposition
$\text{H}_2 + \text{O}_2 \rightarrow \text{H}_2\text{O}$	$\text{H}_2\text{O} \rightarrow \text{H}_2 + \text{O}_2$
$\text{Na} + \text{Cl}_2 \rightarrow \text{NaCl}$	$\text{NaCl} \rightarrow \text{Na} + \text{Cl}_2$

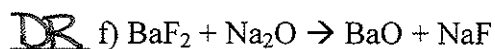
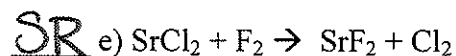
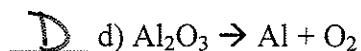
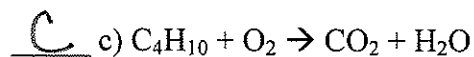
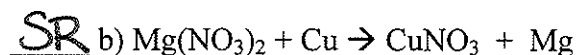
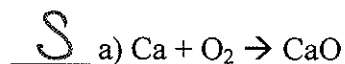
Critical Thinking Questions

7. Every synthesis reaction has 1 product and every decomposition reaction has 1 reactant.
how many how many?

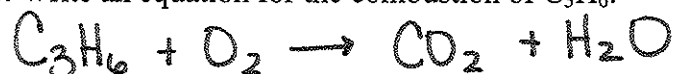
8. Write a synthesis reaction for sodium metal reacting with chlorine gas to form sodium chloride. (Remember that chlorine is diatomic.)



9. Categorize each of the following reactions as single replacement (SR), double replacement (DR), synthesis (S), decomposition (D) or combustion (C).



10. Write an equation for the combustion of C_3H_6 .

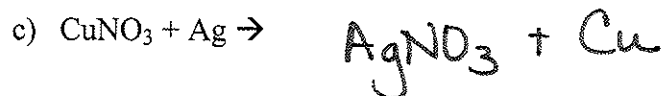


11. Write an equation for the decomposition of calcium oxide.



Practice Problems

1. Complete the following reactions.



2. Fill in the blanks for the missing reactant or product and then in the blank to the left of each equation indicate whether the reaction is a single replacement (SR), double replacement (DR), synthesis (S), decomposition (D) or combustion (C).

