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SIGNS OF CHEMICAL REACTIONS


There are five main signs that indicate a chemical reaction has taken place:




Change in color



Evolution of a gas



Change in temperature



Change in state

Neutralization Reaction Worksheet							
Element:	Element's complete neutralization reaction in the space provided. Be sure to balance your reaction and include states when appropriate. Name the acid, base, and salt.						
1	HCl (aq)	1	Ca(OH) ₂ (aq)	1	CaCl ₂ (aq)	2	H ₂ O (l)
	hydrochloric acid		calcium hydroxide		calcium chloride		water
3	HCl (aq)		NaOH (aq)		NaCl (aq)		water
4	H ₂ SO ₄ (aq)		Zn(OH) ₂ (s)				H ₂ O (l)
5	HCl (aq)		LiOH (aq)				water
6	HBr (aq)		NaClO ₃ (aq)				water
7	HBr (aq)		Ca(OH) ₂ (aq)				water
8	HBr (aq)		Ca(OH) ₂ (aq)				water
9	H ₂ SO ₄ (aq)		NaOH (aq)				water
10	HNO ₃ (aq)		Mg(OH) ₂ (s)				water
11	HCl (aq)						water
12							water



On this worksheet, we will practice describing and writing chemical equations for displacement reactions and relating these reactions to the reactivity series. Q1: The following neutralization reaction is also an example of a displacement reaction: $\text{NaOH} + \text{HCl} + \text{NaCl} + \text{H}_2\text{O}$ In this reaction, what is being displaced? Asodium Bhydrogen Cchlorine DOxygen Q2: Fill in the blanks: In a displacement reaction, a metal displaces a metal. Amore conductive Bmore dense, less dense Cless dense, more dense Dless reactive, more reactive Emore reactive, less reactive Q3: The table below shows whether a displacement reaction occurs for a series of reactions between four metals and their compounds. By using the results in the table, what is the order of reactivity from the most reactive to least reactive metal? Tin Sulfate Copper Sulfate Magnesium Sulfate Nickel Sulfate Tin - Yes No No Copper No - No No Magnesium Yes Yes - Yes Nickel Yes Yes No - A-copper, tin, nickel, magnesium BMagnesium, nickel, tin, copper CTin, magnesium, copper, nickel Dnickel, tin, copper, magnesium ECopper, nickel, magnesium, tin Q4: The symbol equation for a displacement reaction is as follows: $\text{Ca} + \text{ZnCl}_2(\text{aq}) \rightarrow \text{Zn} + \text{CaCl}_2(\text{aq})$ Which element is being displaced in this reaction? Q5: Displacement reactions can occur with metal oxides. What products are formed from the following reaction? Complete the word equation with the right products: Aluminumironoxide + _____ Aluminumironoxide + _____ Balmuniumoxideiron + _____ Caluminumoxideiron + _____ Dalmuniumoxideiron + _____ Ealuminumoxideiron + _____ Q6: When a piece of lead is added to a solution of copper sulfate, a displacement reaction occurs. What is the symbol equation for this chemical reaction? $\text{Pb} + \text{CuSO}_4 \rightarrow \text{PbSO}_4 + \text{Cu}$ Q7: Fill in the blanks: In a displacement reaction, a metal displaces a metal. Amore conductive Bmore dense, less dense Cless dense, more dense Dless reactive, more reactive Emore reactive, less reactive Q8: For which of the following chemical reactions will no displacement reaction occur? Areactive iron + _____ Bcoppernitrate + _____ Ccoppernitrate + _____ Dcoppernitrate + _____ ECoppernitrate + _____ Q9: The image below shows a small section of the reactivity series of metals. Which of these metals is the most reactive? ACalcium BPotassium CMagnesium DGold ELead Q10: The reactivity series of metals is shown below. Which metal would not displace gold in a chemical reaction? AMagnesium BAluminum CZinc DSodium EPlatinum This lesson includes 4 additional questions and 28 additional question variations for subscribers. 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BAluminum is less reactive than iron so it corroded more slowly by oxygen in the air. CWater in the air binds to aluminum to form a protective layer. DAluminum is less reactive than oxygen so it does not corrode in the presence of air. EAluminum reacts with nitrogen in the air to form a protective layer of aluminum nitride. Q3: Which of the following statements describing the reaction between pairs of metals is not correct? AMagnesium is more reactive than zinc. BSilver is more reactive than gold. CIron is more reactive than sodium. DPotassium is more reactive than aluminum. ECalcium is more reactive than copper. Q4: Which of the following carbonate salts is the most thermally stable? ANaCO₃ BCuCO₃ CMgCO₃ DFeCO₃ EPbCO₃ Q5: The table below shows a series of reactions between elemental metals and metal salts and the products that form. Using this table, what is the order of the elements from most to least reactive? 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