

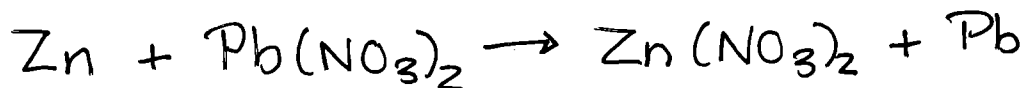
Reactions Unit Review

Word Equations

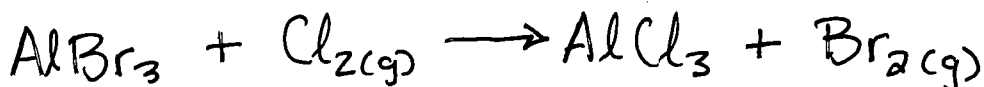
Remember
Phases

Write the word equations below as chemical equations and balance:

- 1) Zinc and lead (II) nitrate react to form zinc nitrate and lead.



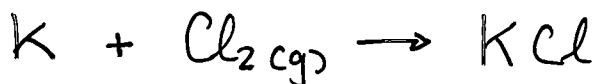
- 2) Aluminum bromide and chlorine gas react to form aluminum chloride and bromine gas.



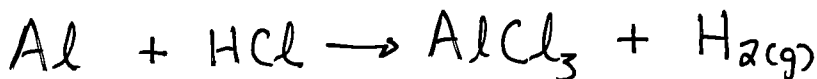
- 3) Sodium phosphate and calcium chloride react to form calcium phosphate and sodium chloride.



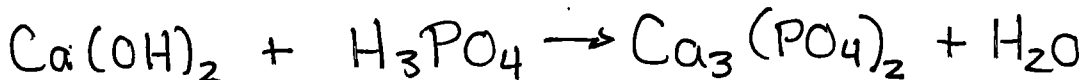
- 4) Potassium metal and chlorine gas combine to form potassium chloride.



- 5) Aluminum and hydrochloric acid react to form aluminum chloride and hydrogen gas.



- 6) Calcium hydroxide and phosphoric acid react to form calcium phosphate and water.



- 7) Copper and sulfuric acid react to form copper (II) sulfate and water and sulfur dioxide.

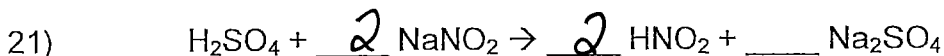
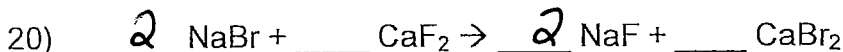
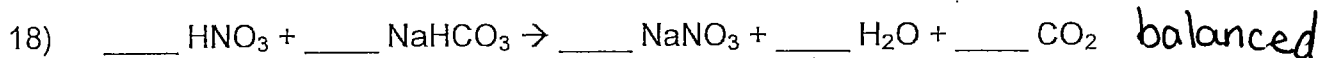
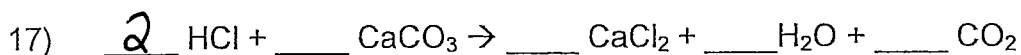
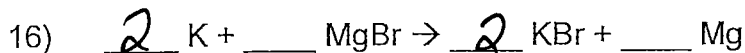
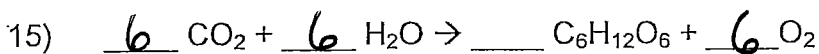
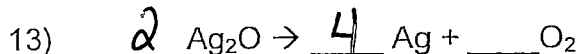
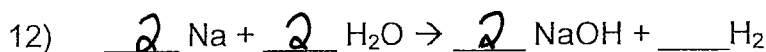
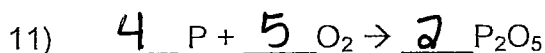
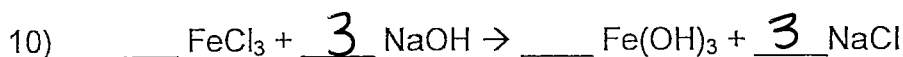
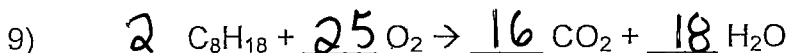
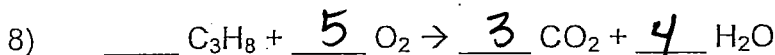
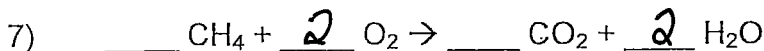
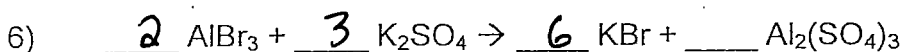
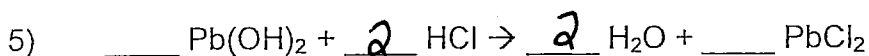
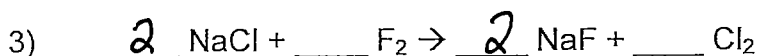
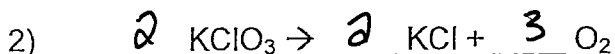
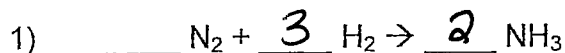


- 8) Hydrogen gas and nitrogen monoxide react to form water and nitrogen gas.



Balancing Chemical Equations

Balance the equations below:



A Voyage through Equations

After working on this worksheet, you should be able to do the following:

- 1) Given an equation, you should be able to tell what kind of reaction it is.
- 2) Predict the products of a reaction when given the reactants.

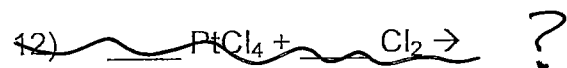
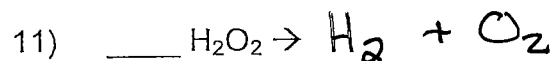
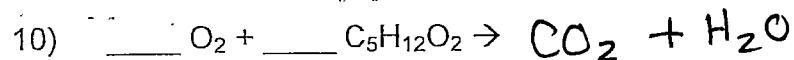
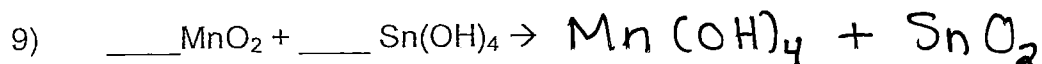
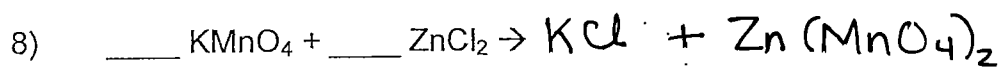
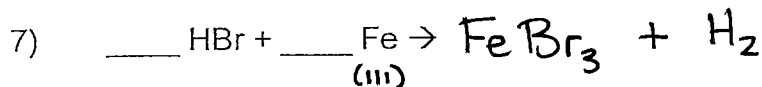
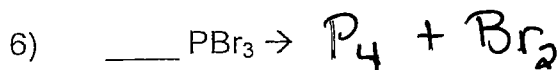
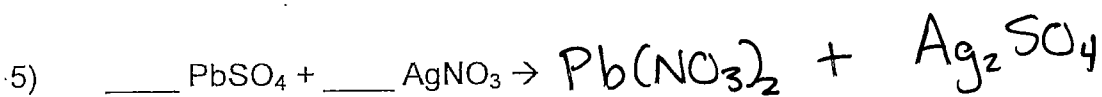
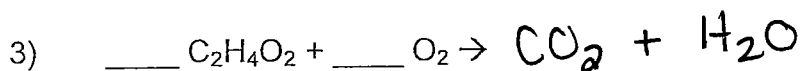
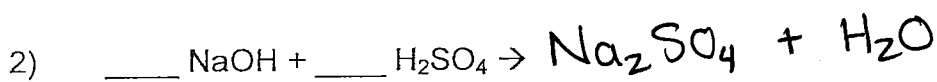
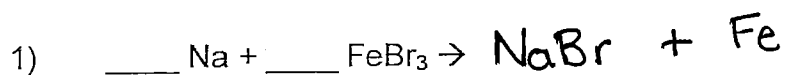
Section 1: Identify the type of reaction

For the following reactions, indicate whether the following are examples of synthesis, decomposition, combustion, single displacement, double displacement, or acid-base reactions:

- 1) $\text{Na}_3\text{PO}_4 + 3 \text{KOH} \rightarrow 3 \text{NaOH} + \text{K}_3\text{PO}_4$ double replacement
- 2) $\text{MgCl}_2 + \text{Li}_2\text{CO}_3 \rightarrow \text{MgCO}_3 + 2 \text{LiCl}$ double replacement
- 3) $\text{C}_6\text{H}_{12} + 9 \text{O}_2 \rightarrow 6 \text{CO}_2 + 6 \text{H}_2\text{O}$ combustion
- 4) $\text{Pb} + \text{FeSO}_4 \rightarrow \text{PbSO}_4 + \text{Fe}$ single replacement
- 5) $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2$ decomposition
- 6) $\text{P}_4 + 3 \text{O}_2 \rightarrow 2 \text{P}_2\text{O}_3$ synthesis
- 7) $2 \text{RbNO}_3 + \text{BeF}_2 \rightarrow \text{Be}(\text{NO}_3)_2 + 2 \text{RbF}$ double replacement
- 8) $2 \text{AgNO}_3 + \text{Cu} \rightarrow \text{Cu}(\text{NO}_3)_2 + 2 \text{Ag}$ single replacement
- 9) $\text{C}_3\text{H}_6\text{O} + 4 \text{O}_2 \rightarrow 3 \text{CO}_2 + 3 \text{H}_2\text{O}$ combustion
- 10) $2 \text{C}_5\text{H}_5 + \text{Fe} \rightarrow \text{Fe}(\text{C}_5\text{H}_5)_2$ synthesis
- 11) $\text{SeCl}_6 + \text{O}_2 \rightarrow \text{SeO}_2 + 3 \text{Cl}_2$ single replacement
- 12) $2 \text{MgI}_2 + \text{Mn}(\text{SO}_3)_2 \rightarrow 2 \text{MgSO}_3 + \text{MnI}_4$ double replacement
- 13) $\text{O}_3 \rightarrow \text{O} + \text{O}_2$ decomposition
- 14) $2 \text{NO}_2 \rightarrow 2 \text{O}_2 + \text{N}_2$ decomposition

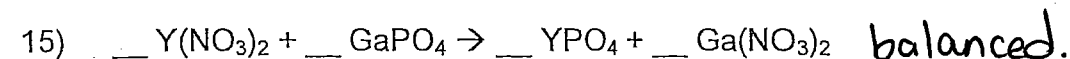
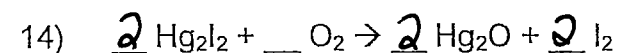
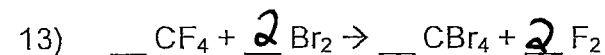
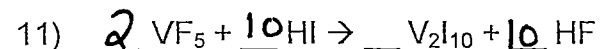
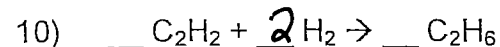
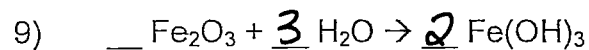
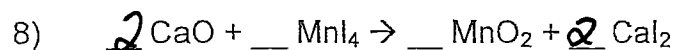
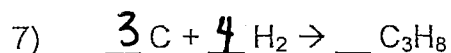
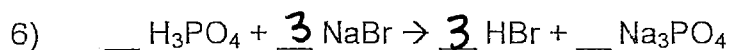
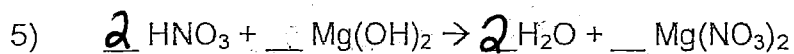
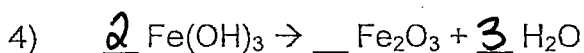
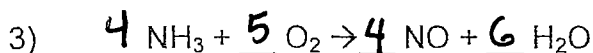
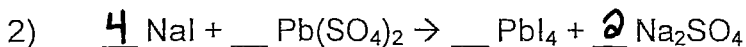
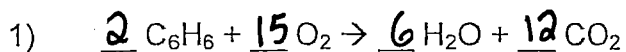
Predicting Reaction Products

Balance the equations and predict the products for the following reactions:



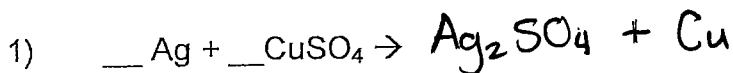
Section 2: Practicing equation balancing

Before you can write a balanced equation for a problem which asks you to predict the products of a reaction, you need to know how to balance an equation. Because some of you may not fully remember how to balance an equation, here are some practice problems:

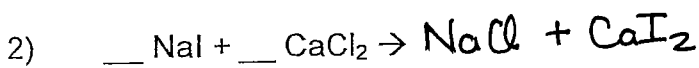


Section 3: Predicting the products of chemical reactions

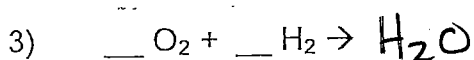
Predict the products of the following reactions:



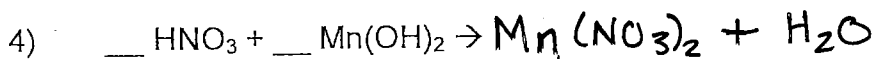
Type: single replacement



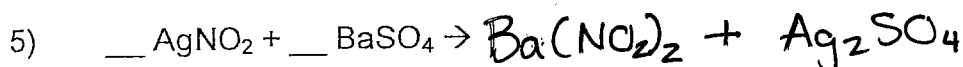
Type: double replacement



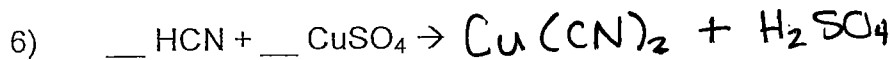
Type: synthesis



Type: double replacement



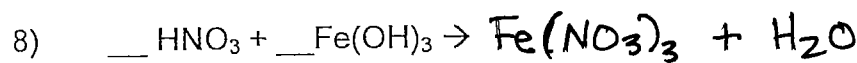
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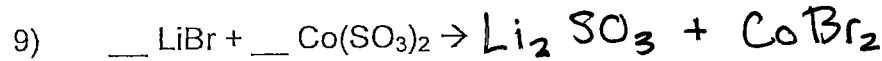
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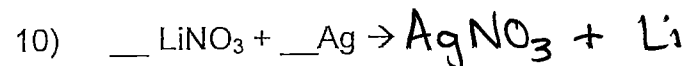
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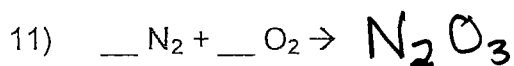
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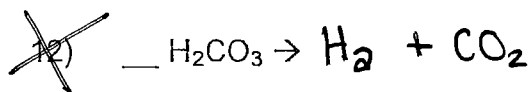
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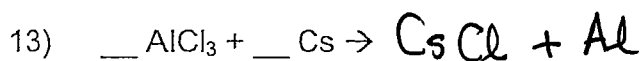
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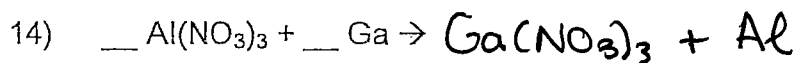
Type: synthesis



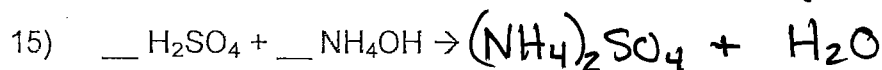
Type: decomposition



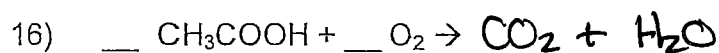
Type: single replacement



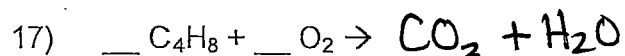
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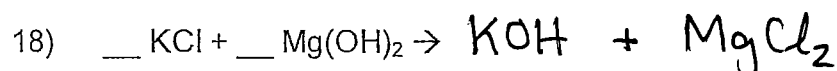
Type: double replacement



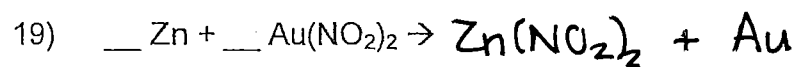
Type: combustion



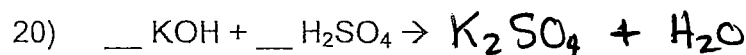
Type: combustion



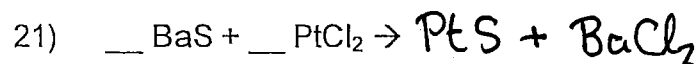
Type: double replacement



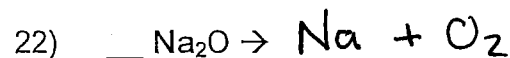
Type: single replacement



Type: double replacement

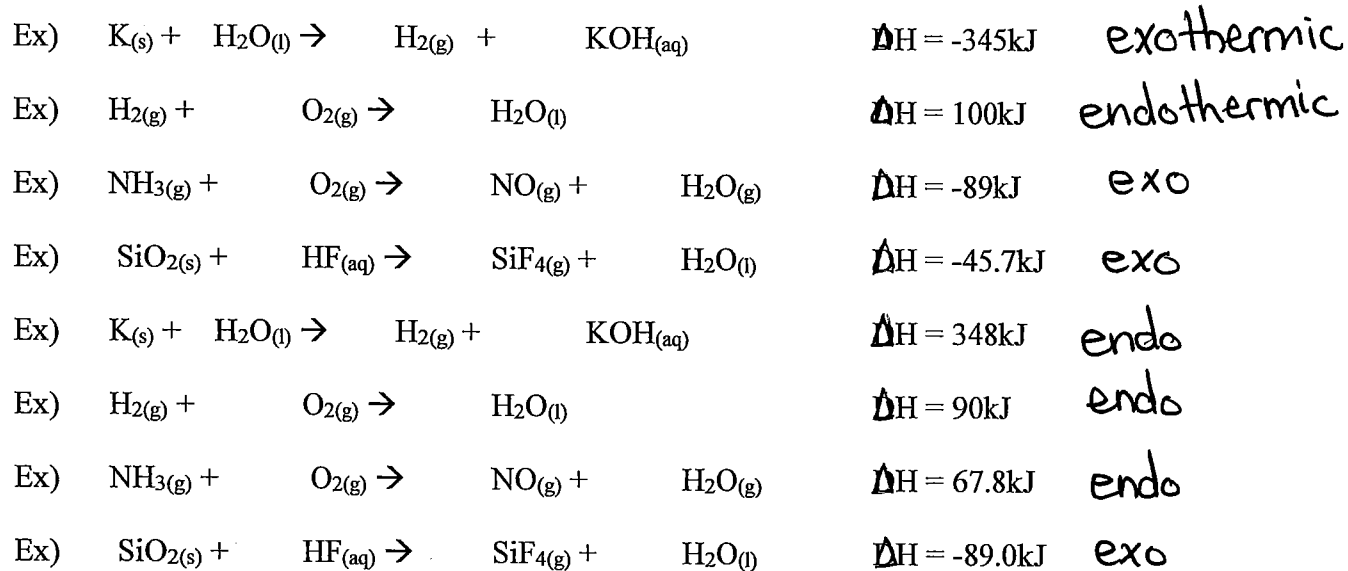


Type: double replacement

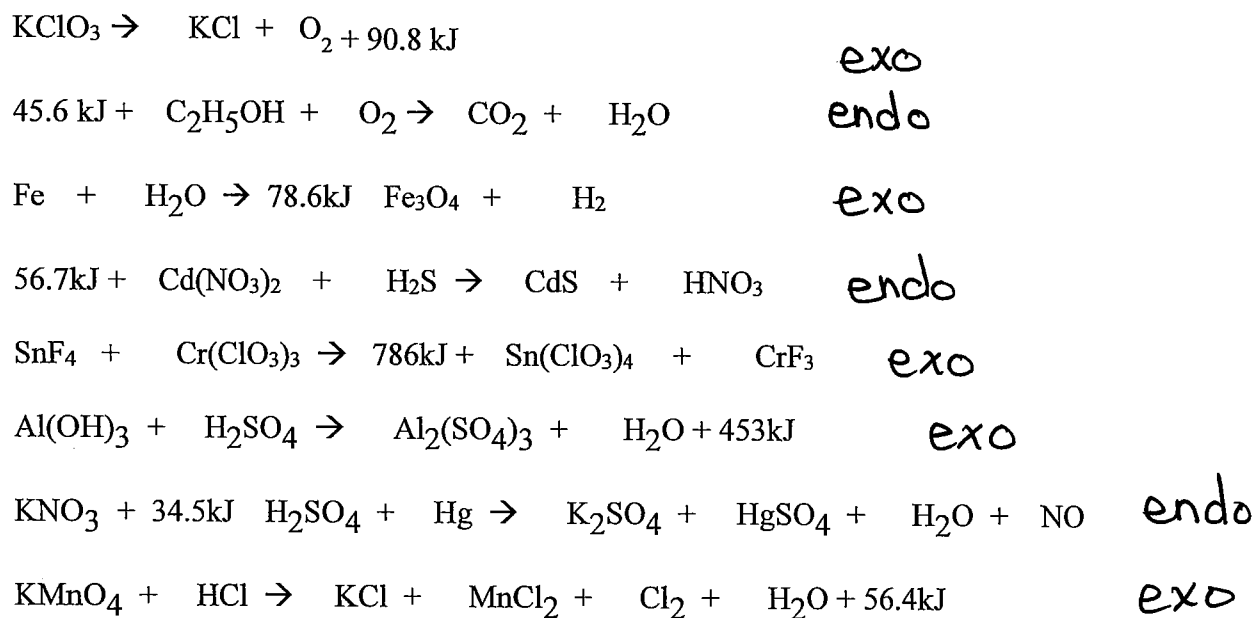


Type: decomposition

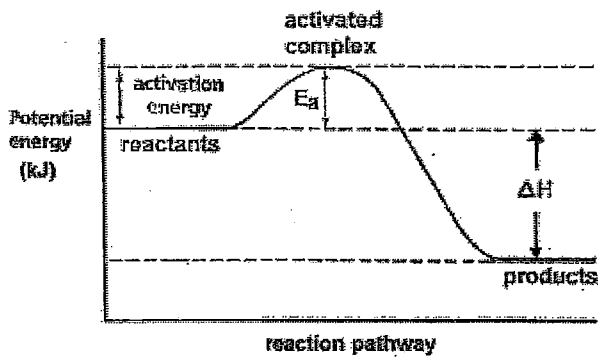
Balance and state whether it is exothermic or endothermic:



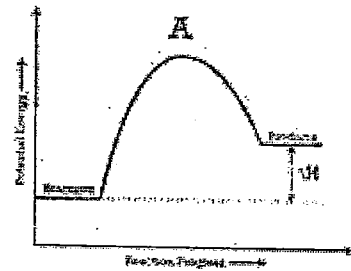
More Examples



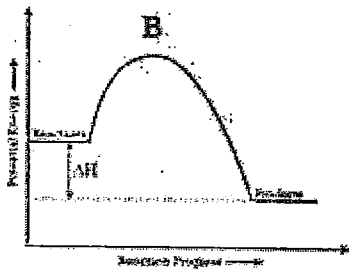
	$\text{H}_3\text{PO}_4 + \text{KOH} \Rightarrow \text{K}_3\text{PO}_4 + \text{H}_2\text{O} + 65.7\text{kJ}$
exo	$\text{K} + \text{B}_2\text{O}_3 \Rightarrow \text{K}_2\text{O} + \text{B} \quad \Delta\text{H} = 87.6\text{kJ}$
endo	$\text{HCl} + \text{NaOH} \Rightarrow \text{NaCl} + \text{H}_2\text{O} + 256\text{kJ}$
exo	$\text{Na} + \text{NaNO}_3 \Rightarrow \text{Na}_2\text{O} + \text{N}_2 \quad \Delta\text{H} = -453\text{kJ}$
exo	$87.5\text{kJ} \text{ C} + \text{S}_8 \Rightarrow \text{CS}_2$
endo	$\text{Na} + \text{O}_2 \Rightarrow \text{Na}_2\text{O}_2 \quad \Delta\text{H} = -90.8\text{kJ}$
exo	$\text{N}_2 + \text{O}_2 \Rightarrow \text{N}_2\text{O}_5 \quad \Delta\text{H} = 65.2\text{kJ}$
endo	$\text{H}_3\text{PO}_4 + \text{Mg}(\text{OH})_2 \Rightarrow \text{Mg}_3(\text{PO}_4)_2 + \text{H}_2\text{O} \quad \Delta\text{H} = 56.4\text{kJ}$
endo	$\text{NaOH} + \text{H}_2\text{CO}_3 \Rightarrow \text{Na}_2\text{CO}_3 + \text{H}_2\text{O} + 58.4\text{kJ}$
exo	$\text{KOH} + \text{HBr} \Rightarrow 89.75\text{kJ} + \text{KBr} + \text{H}_2\text{O}$
exo	$45.9\text{kJ} + \text{H}_2 + \text{O}_2 \Rightarrow \text{H}_2\text{O}_2$
endo	$\text{Na} + \text{O}_2 \Rightarrow \text{Na}_2\text{O} \quad \Delta\text{H} = 56.2\text{kJ}$
endo	$\text{Al}(\text{OH})_3 + \text{H}_2\text{CO}_3 \Rightarrow \text{Al}_2(\text{CO}_3)_3 + \text{H}_2\text{O} + 23.5\text{kJ}$
exo	$\text{Al} + \text{S}_8 \Rightarrow 89.2\text{kJ} + \text{Al}_2\text{S}_3$
exo	$\text{Cs} + \text{N}_2 \Rightarrow \text{Cs}_3\text{N} \quad \Delta\text{H} = -86.5\text{kJ}$
exo	$45.23\text{kJ} + \text{Mg} + \text{Cl}_2 \Rightarrow \text{MgCl}_2$



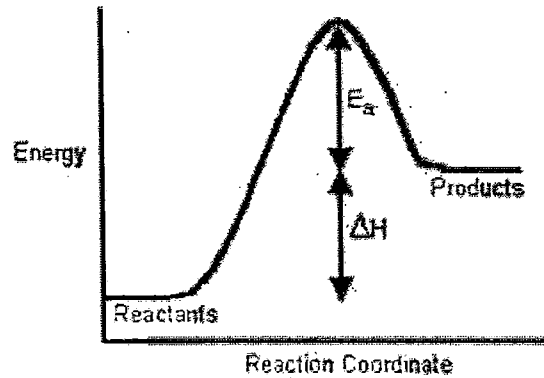
exothermic



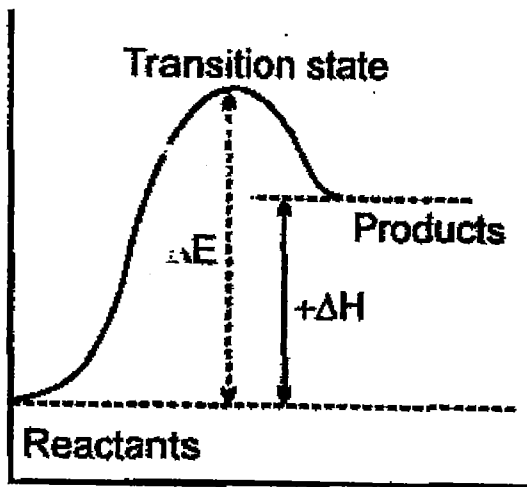
endo thermic



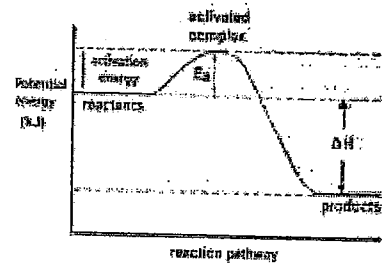
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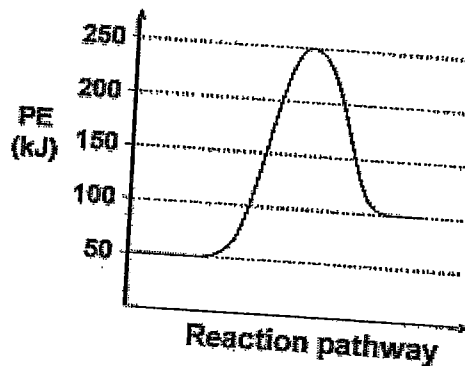
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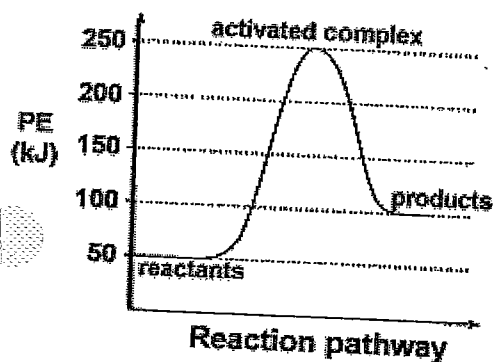
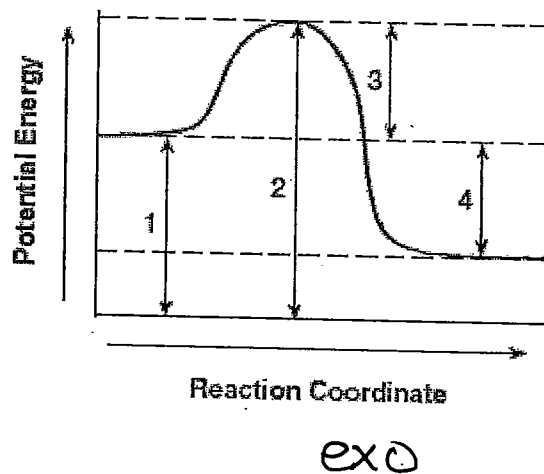
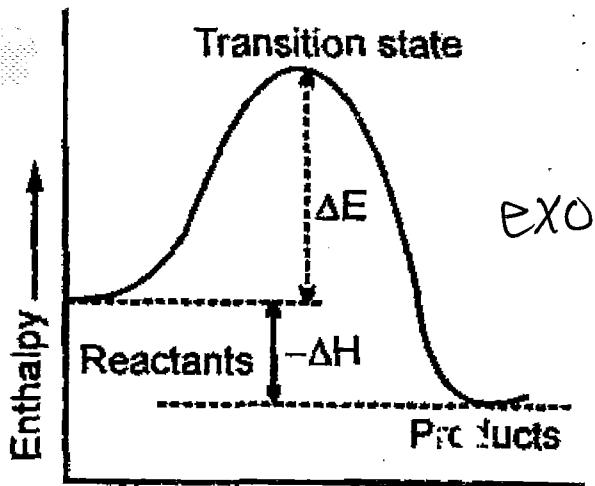
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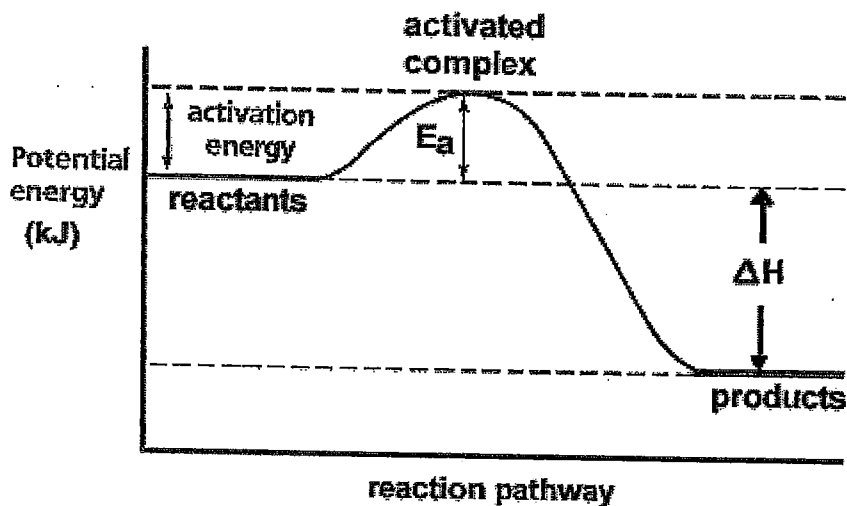
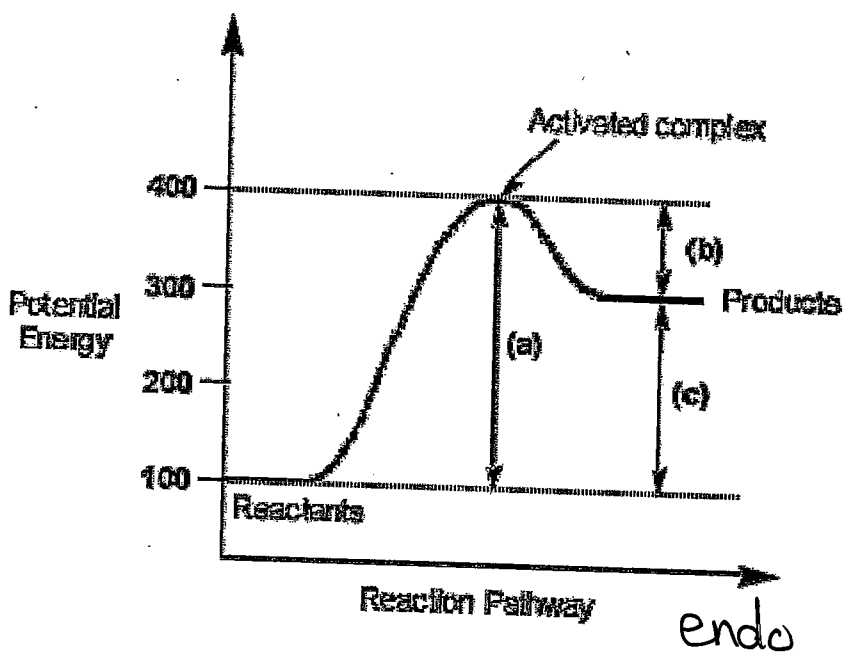
exo



endo.



endo



EXO.

