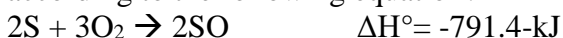


## 12-2 Practice Problems

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*Show work.*

1. How much heat will be released when 6.44-g of Sulfur reacts with excess O<sub>2</sub> according to the following equation?



6. How much heat will be released when 13.7-g of Nitrogen reacts with excess O<sub>2</sub> according to the following equation?



2. How much heat will be released when 4.72-g of Carbon reacts with excess O<sub>2</sub> according to the following equation?



7. How much heat will be released when 11.8-g of Iron reacts with excess O<sub>2</sub> according to the following equation?



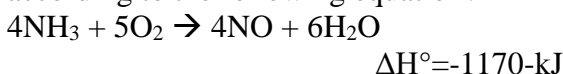
3. How much heat will be absorbed when 38.2-g of Bromine reacts with excess H<sub>2</sub> according to the following equation?



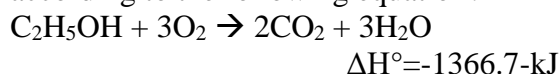
8. How much heat will be released when 18.6-g of Hydrogen reacts with excess O<sub>2</sub> according to the following equation?



4. How much heat will be transferred when 14.9-g of ammonia reacts with excess O<sub>2</sub> according to the following equation?



9. How much heat will be released when 4.77-g of ethanol reacts with excess O<sub>2</sub> according to the following equation?



5. How much heat will be released when 1.48-g of Chlorine Gas reacts with excess P according to the following equation? Is this reaction endothermic or exothermic?



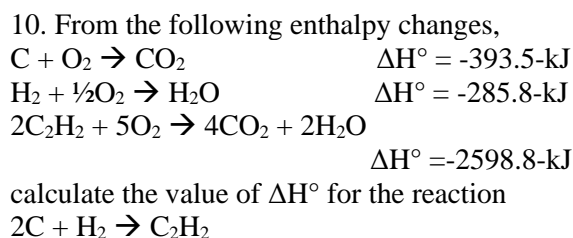
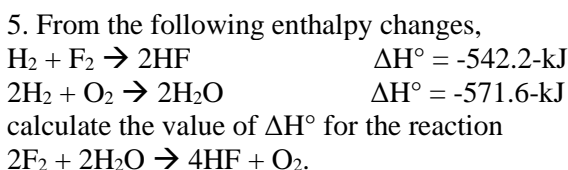
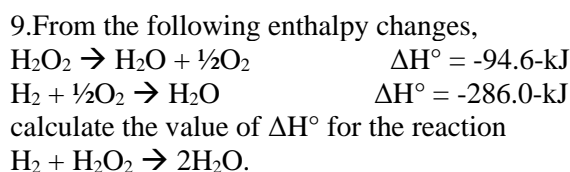
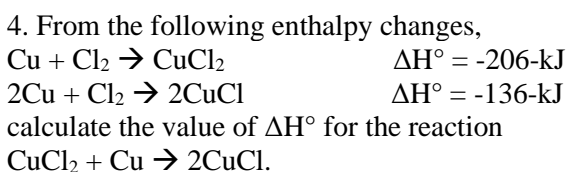
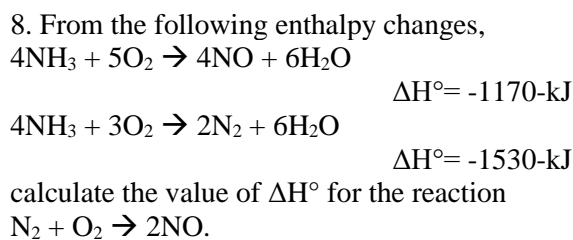
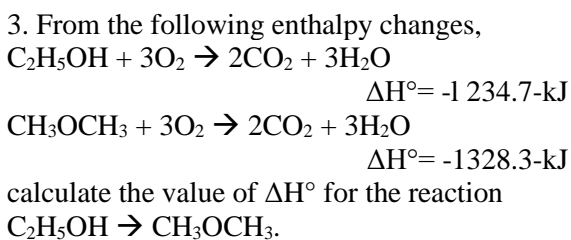
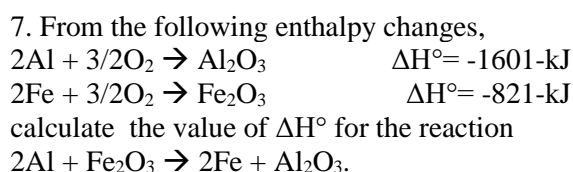
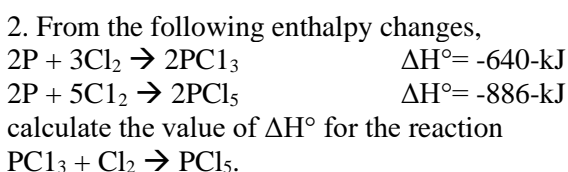
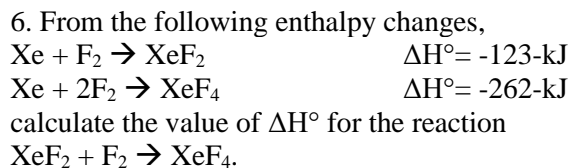
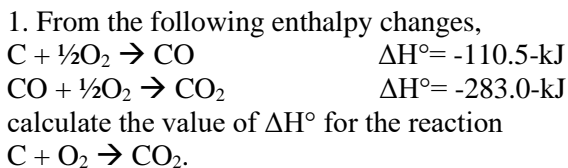
10. How much heat will be transferred when 5.81-g of graphite reacts with excess H<sub>2</sub> according to the following equation? Is this reaction endothermic or exothermic?



## 12-3 Practice Problems

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Use Hess's law to determine the following enthalpy changes. Show work.



# 12-4 Practice Problems

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*Show work.*

1. When a 12.8-g sample of KCl dissolves in 75.0-g of water in a calorimeter, the temperature drops from 31.0°C to 21.6°C. Calculate  $\Delta H$  for the process.



6. When a 19.2-g sample of KCN dissolves in 65.0-g of water in a calorimeter, the temperature drops from 28.1°C to 15.4°C. Calculate  $\Delta H$  for the process.



~~2. What is the specific heat of aluminum if the temperature of a 28.4 g sample of aluminum is increased by 8.1°C when 207 J of heat is added?~~

~~7. What is the specific heat of gold if the temperature of a 8.21 g sample of gold is increased by 6.2°C when 6.51 J of heat is added?~~

3. When a 25.7-g sample of NaI dissolves in 80.0-g of water in a calorimeter, the temperature rises from 20.5°C to 24.4°C. Calculate  $\Delta H$  for the process.



8. When a 28.7-g sample of KI dissolves in 60.0 g of water in a calorimeter, the temperature drops from 27.2°C to 13.2°C. Calculate  $\Delta H$  for the process.



~~4. What is the specific heat of silicon if the temperature of a 4.11 g sample of silicon is increased by 3.8°C when 11.1 J of heat is added?~~

~~9. What is the specific heat of silver if the temperature of a 15.4 g sample of silver is increased by 11.2°C when 40.5 J of heat is added?~~

5. When a 16.9-g sample of NaOH dissolves in 70.0-g of water in a calorimeter, the temperature rises from 22.4°C to 86.6°C. Calculate  $\Delta H$  for the process.



~~10. What is the specific heat of Titanium if the temperature of a 36.7 g sample of titanium is increased by 4.8°C when 91.6 J of heat is added?~~