EXAMPLE GIBBS CALCULATIONS

1. Calcium Oxide reacts with water to form Calcium Hydroxide

$$CaO_{(s)} + H_2O_{(l)} \rightarrow Ca(OH)_{2(s)}$$
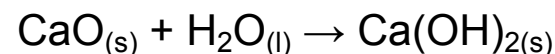
Thermodynamic Data:	ΔH_f / kJ.mol^{-1}	S / J.K.mol^{-1}
$CaO_{(s)}$	-636.5	39.7
$H_2O_{(l)}$	-285.9	70.0
$Ca(OH)_{2(s)}$	-986.6	76.1

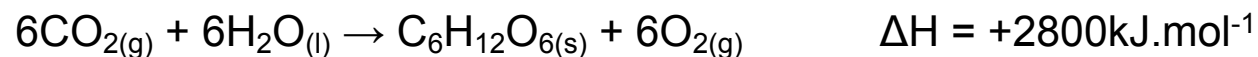a) Calculate the Enthalpy changes for the reactions.

b) Calculate the Entropy Change for the reactions.

c) At what temperature would this reaction **NOT** be feasible?

EXAMPLE GIBBS CALCULATIONS

2. Plants are able to produce Glucose from Carbon Dioxide and water.

$$6CO_{2(g)} + 6H_2O_{(l)} \rightarrow C_6H_{12}O_{6(s)} + 6O_{2(g)} \qquad \Delta H = +2800kJ.mol^{-1}$$

	$CO_{2(g)}$	$H_2O_{(l)}$	$C_6H_{12}O_{6(s)}$	$O_{2(g)}$
S / J.K.mol^{-1}	214	70	218	205

a) Calculate the Entropy Change for the reation.

b) Calculate ΔG for the reaction at 298K.

c) Explain why this reaction is **NOT** feasible at **ANY** temperature.