

Gibbs Mental Math

$\Delta H_{\text{sys}} - T\Delta S_{\text{sys}} = \Delta G_{\text{sys}}$			
ΔH	ΔS	ΔG	At...
- <i>exothermic</i>	+ <i>more disorder</i>	- <i>ALWAYS spont.</i>	Any temp
+ <i>endothermic</i>	- <i>less disorder</i>	+ <i>NEVER spont.</i>	Any temp
- <i>exothermic</i>	- <i>less disorder</i>	- <i>spont.</i>	Low Temp
- <i>exothermic</i>	- <i>less disorder</i>	+ <i>NOT spont.</i>	High Temp
+ <i>endothermic</i>	+ <i>more disorder</i>	- <i>spont.</i>	High Temp
+ <i>endothermic</i>	+ <i>more disorder</i>	+ <i>NOT spont.</i>	Low Temp

	$\Delta H < 0$	$\Delta H > 0$
$\Delta S > 0$	Spontaneous at all T ($\Delta G < 0$)	Spontaneous at high T (when $T\Delta S$ is large)
$\Delta S < 0$	Spontaneous at low T (when $T\Delta S$ is small)	Non-spontaneous at all T ($\Delta G > 0$)

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