Name: **Period:** **Seat#:**

Directions: Try these problems. If you can DO them, check the box (☑).
If you CANNOT do them, write some notes TO YOURSELF about what you need to study to succeed at these problems.

☐ **Positive or Negative:**

When solid $CaCl_2$ dissolves in water, the solution gets hot. Predict the signs of ΔS, ΔH, and ΔG.

ΔS	ΔH	ΔG

☐ **Spontaneity:**

Put a check next to the following situations that would lead to a spontaneous reaction.

☑	**ΔS**	**ΔH**	**Temperature**
	+	+	low temp
	+	–	high temp
	–	+	high temp
	–	–	low temp

☐ **Entropy Change:**

Calculate the standard entropy change for the following reaction, $Cu(s) + ½\ O_2(g) \rightarrow CuO(s)$, given that

$S°[Cu(s)] = 33.15\ J/K·mol$
$S°[O_2(g)] = 205.14\ J/K·mol$
$S°[CuO(s)] = 42.63\ J/K·mol$

☐ **Changeover Temperature:**

At what temperature would a given reaction become spontaneous if ΔH = +119 kJ and ΔS = +263 J/K?

☐ **Entropy:**

In which one of the following reactions do you expect to have a decrease in entropy?

a) $Fe(s) \rightarrow Fe(l)$
b) $Fe(s) + S(s) \rightarrow FeS(s)$
c) $2\ Fe(s) + 3/2\ O_2(g) \rightarrow Fe_2O_3(s)$
d) $HF(l) \rightarrow HF(g)$
e) $2\ H_2O_2(l) \rightarrow 2\ H_2O(l) + O_2(g)$

Struggled? Got some wrong? Do some self-study!