**Name: Period: Seat#:**

**S-15**

**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 CaCl2 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 O2(g) → CuO(s), given that

|  |
| --- |
| S°[Cu(s)] = 33.15 J/K·mol |
| S°[O2(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) → Fe(*l*)

 b) Fe(s) + S(s) → FeS(s)

 c) 2 Fe(s) + 3/2 O2(g) → Fe2O3(s)

 d) HF(*l*) → HF(g)

 e) 2 H2O2(*l*) → 2 H2O(*l*) + O2(g)