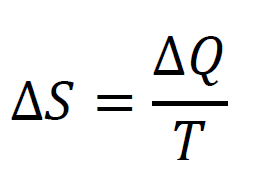
**Videos 15I - Entropy Name**

2nd Law of Thermodynamics:

Write down what these things are:

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**Example** – A 35.0 gram piece of iron (C = 450. J/kg/oC) initially at 35.0 oC is placed in a cup of water at 30.0 oC and they come to equilibrium at 31.0 oC.

* Estimate the change in entropy of the iron. (-0.206 J/K)
* Estimate the change in entropy of the water. (+0.207 J/K)
* What is the net change in entropy? (+0.00169 J/K)

(net increase when from hot to cold, why this is an estimate, how temperature is defined)

**Example** – A 68.0 gram ice cube (L = 3.33x105 J/kg) at 0 oC is thrown in a swimming pool that is at 18.0 oC.

* What is the change in entropy of the ice cube? (+82.9 J/K)
* What is the change in entropy of the pool? (-77.8 J/K)

(solid to liquid is an increase of entropy….)

Whiteboards: (These are solved on the website in the videos linked after the main one)

|  |  |
| --- | --- |
| 1. What is the change in entropy when 34.0 grams of water at 0 oC freezes? (L = 3.33x105 J/kg)  (-41.4 J/K ) | 2. A 150 gram piece of copper (c = 390. Jkg-1oC-1) heats from 40.0 oC to 42.0 oC. Estimate the change in entropy.  (+0.37 J/K ) |
| 3. A 164.0 gram piece of copper (c = 390. Jkg-1oC-1) at 32.0 oC is placed into water at 20.0 oC. If they come into equilibrium at 24.0 oC  a. Estimate the change in entropy of the copper.  b. Estimate the change in entropy of the water.  c. What is the net entropy change?  (-1.70 J/K, +1.73 J/K, +0.0345 J/K) | |