"Annotations are brief, yet informative and logical"

Example #1- Lab T2: Specific Heat of a Metal

= First, analyze the surroundings for heat gain

$$Q_{water} = m_{water} \cdot C_{water} \cdot \Delta T_{water}$$

$$= (100.0g)(4.184 \frac{J}{g°C})(26.0-22.0)$$

$$= 1673.6 J = 1.7 \times 10^3 J$$

= Now assume heat gained by H_2O = heat lost by metal. Thus $Q_{metal} = 1673.6 J$

= Calculate heat capacity of metal:

$$Q_{metal} = m_{metal} \cdot C_{metal} \cdot \Delta T_{metal}$$

$$C_{metal} = \frac{Q_{metal}}{m_{metal} \cdot \Delta T_{metal}} = \frac{1673.6 J}{(63.546g)(101.0-26.0°C)}$$

$$C_{metal} = 0.35 J/g°C$$

= Theoretical value = 0.385 J/g°C

= % error calc'n:

$$\% \text{ error} = \frac{|0.385-0.35|}{0.385} \times 100 = 9.0\%$$

Example #2 - Lab T4: Heat of Solution

= Begin with H_2O (the surroundings)

$$q_{water} = m_{water} \cdot C_{water} \cdot \Delta T_{water}$$

$$= 4.184 \frac{J}{g\,^\circ C} \cdot 100.0g \cdot (40.0 - 16.6^\circ C)$$

$$= 9790.56\ J \quad = 9790\ J$$

= Assume heat loss by water was gained by system (NH_4NO_3)

The 40.00g NH_4NO_3 gained 9790.56J of Heat

= Find heat of solution of NH_4NO_3 in KJ/mol

$$\Delta H = \frac{9790.56J}{40.00g} * \frac{1\ KJ}{10^3 J} * \frac{80.06g}{1\ mol}$$

$$\Delta H = 19.5958 \frac{KJ}{mol} = \boxed{19.6\ KJ/mol}$$

= Theoretical value = 25.69 KJ/mol

= % error calculation

$$\%\ error = \frac{|19.6 - 25.69|}{25.69} * 100 = \boxed{23.7\%}$$

WORSE ⟵⟶ **BEST**

Don't Show Work — Don't Show Units — Don't Show Labels — Show work, with units, with labels & annotated