1210 Review Quiz

Name: Key

Question 1

Give the number of protons, electrons, and neutrons in each atom or ion

	e^-	p^+	n
^{27}Al	13	13	14
$^{127}I^-$	54	53	74
$^{40}Ca^{2+}$	18	20	20

Question 2

A coffee-cup calorimeter contains $150.0\ g$ of pure water. When $5.75\ g$ of ammonium nitrate are added to the water, they dissolve and the solution temperature drops by $2.83\ °C$. What is the enthalpy of solvation for ammonium nitrate?

$q = m\,C\,\Delta T$

$q = 155.75\,g \cdot 4.184\ J/g°C \cdot -2.83\ °C = -1844\ J = -1.844\ kJ$

$$5.75\,g\ NH_4NO_3 \left| \frac{1\ mol}{80.043\,g} \right. = 0.07184\ moles\ NH_4NO_3$$

$$\Delta H = \frac{-q}{n} = \frac{1.844\ kJ}{0.07184\ moles} = 25.7\ kJ/mol$$