values indicate that energy is being released by the system. As you develop your rule, think about how you could present it as a mathematical equation.

TABLE L20.1

$\Delta H_{dissociation}$ and $\Delta H_{hydration}$ values for the ionic compounds used in this investigation

Ionic compound	$\Delta H_{dissociation}$ (kJ/mol)*	$\Delta H_{hydration}$ (kJ/mol)
LiCl	853	–883
$CaCl_2$	2,258	–2378
KCl	715	–685
NaCl	788	–784
CsCl	657	–639
$NaClO_3$	658	–636
NaI	693	–701

* This value reflects the energy required to break apart the ions in the solute and the energy required to disrupt the hydrogen bonds between the water molecules.

The last step is to test your rule. To accomplish this goal, you will need to determine if you can use your rule to make accurate predictions. You should, in other words, be able to use your rule to predict if the $\Delta H_{solution}$ of $NaClO_3$ and NaI will be exothermic or endothermic. If you are able to make accurate predictions about the $\Delta H_{solution}$ for these two ionic compounds, then you will be able to generate the evidence you need to convince others that the rule that you developed is valid.

Connections to Crosscutting Concepts, the Nature of Science, and the Nature of Scientific Inquiry

As you work through your investigation, be sure to think about

- the importance of defining the system under study and then using a model to make sense of it,
- the importance of tracking how matter and energy move into and within a system,
- the difference between observations and inferences in science, and
- the difference between laws and theories in science.

Initial Argument

Once your group has finished collecting and analyzing your data, you will need to develop an initial argument. Your argument must include a *claim*, which is your answer to the guiding question. Your argument must also include *evidence* in support of your