Lab Portion of Pretest 2.1

1. Why was the following reaction more exothermic than the one where $NaOH_{(s)}$ dissolved and more exothermic than the one where ***aqueous*** NaOH neutralized the acid?

   $NaOH_{(s)} + HCl_{(aq)} \rightarrow NaCl_{(aq)} + H_2O$

   Answer: In the above, the solid NaOH had to first dissolve—which released heat—and then it neutralized the acid, which released even more heat.

2. List two strategies that could have been used to prevent heat loss in the calorimetry experiments.

   Answer: Use extra insulation like an extra cup or glass beaker. Keep the lid on while stirring.

3. Why should you not proceed with a calorimetry experiment if the NaOH looks slimy or if LiCl is all clumped up?

   Answer: In both cases the cause of the change in appearance is a reaction with water from the air. If a bit of solid has already dissolved in water, the whole sample will not release as much heat when it's placed in water within a calorimeter.