Name Date

Worksheet 13.1: Decomposition of   
calcium carbonate

Analysis of results

**1** Record your observations from the experiment, including those which could be evaluated as sources of errors.

**2** Record raw quantitative data in a table. You need to include units and absolute uncertainties   
where appropriate.

**3** Write out a Hess’s law energy cycle for the reactions taking place.

**4** Calculate the heat energy per mole for calcium carbonate and hydrochloric acid.

**5** Calculate the heat energy per mole for calcium oxide and hydrochloric acid.

**6** Calculate the enthalpy change of decomposition for calcium carbonate.

**7** Calculate the percentage uncertainties for both reactions.

**8** Calculate the overall uncertainty for the reaction.

Evaluation of results

**9** Work out the percentage error based on the literature value for this reaction.

**10** How would you reduce the random error for this experiment?

**11** List all the systematic errors you can think of for this experiment and give an improvement for   
each one.