RESEARCH & WRITING

44. Obtain information on alternative units of measure used to express values of energy as heat and other forms of energy. Also, find out how the quantities relate to SI units. Include information specifically on English units, such as the British thermal unit (BTU), and on typical BTU ratings of household appliances. Calculate how these ratings would be expressed in joules instead.

ALTERNATIVE ASSESSMENT

45. Performance Design a simple calorimeter investigation to determine the molar enthalpy of fusion of water. Use the following materials: a large plastic-foam cup with cover, a thermometer, a balance, water at room temperature, and an ice cube. Allow your teacher to review your design. Then carry out the investigation, and write a laboratory report including your calculations and a comparison of your quantitative results with known values. Try to account for any disagreements between the experimental and actual values.

46. Performance Design an experiment to measure the molar heat capacities of zinc and copper. If your teacher approves the design, obtain the materials needed and conduct the experiment. When you are finished, compare your experimental values with those from a chemical handbook or other reference source.

47. Performance Develop a procedure to measure the ΔH of the reaction shown below. If your teacher approves your procedure, test your procedure by measuring the ΔH value of the reaction. Determine the accuracy of your method by comparing your ΔH with the accepted ΔH value.

$$CH_3COONa(s) \longrightarrow Na^+(aq) + CH_3COO^-(aq)$$

extension

Graphing Calculator

Free-Energy Changes

Go to **go.hrw.com** for a graphing calculator exercise that asks you to calculate and graph free-energy (ΔG) changes.

Keyword: HC6NRGX