9 A 5.00 g sample of potassium chloride was added to 50.0 g of water initially at 20.0 °C. The mixture was stirred and as the potassium chloride dissolved, the temperature of the solution decreased.

0 9 . 1 Describe the steps you would take to determine an accurate minimum temperature that is **not** influenced by heat from the surroundings.

[4 marks]

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0 9 . 2 The temperature of the water decreased to 14.6 °C.

Calculate a value, in kJ mol^{-1}, for the enthalpy of solution of potassium chloride.

You should assume that only the 50.0 g of water changes in temperature and that the specific heat capacity of water is 4.18 J K^{-1} g^{-1}.
Give your answer to the appropriate number of significant figures.

[4 marks]

Enthalpy of solution = _____ kJ mol^{-1}

0 9 . 3 The enthalpy of solution of calcium chloride is -82.9 kJ mol^{-1}.
The enthalpies of hydration for calcium ions and chloride ions are -1650 and -364 kJ mol^{-1}, respectively.

Use these values to calculate a value for the lattice enthalpy of dissociation of calcium chloride.

[2 marks]

Lattice enthalpy of dissociation = _____ kJ mol^{-1}

0 9 . 4 Explain why your answer to Question **9.3** is different from the lattice enthalpy of dissociation for magnesium chloride.

[2 marks]

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