

## Heat of Fusion Investigation

My Data

Your Data

### Water

$$T_w = 58.5\text{ }^\circ\text{C}$$

$$\text{_____ } ^\circ\text{C}$$

$$100\text{ g}$$

$$100\text{ g}$$

$$c = 4.18\text{ J/g}^\circ\text{C}$$

$$4.18\text{ J/g}^\circ\text{C}$$

### Ice

$$T_i = -18^\circ\text{C}$$

$$\text{_____ } ^\circ\text{C}$$

$$16\text{ g}$$

$$\text{_____ g}$$

$$C = 2.0\text{ J/g}^\circ\text{C}$$

$$2.0\text{ J/g}^\circ\text{C}$$

$$H_f = 335\text{ J/g}$$

$$335\text{ J/g}$$

$$\text{Final Temperature} = 37.5\text{ }^\circ\text{C}$$

$$Q = mc\Delta T = \text{The energy needed to bring ice to its melting point. } - 0^\circ\text{C}$$

$$Q = 16\text{ g} \times 2.0\text{ J/g}^\circ\text{C} \times 18^\circ\text{C}$$

$$Q = \text{_____ g} \times 2.0\text{ J/g}^\circ\text{C} \times \text{_____ } ^\circ\text{C}$$

$$Q = 578\text{ J}$$

$$Q = \text{_____ J}$$

$$Q = mH_f = \text{energy needed to melt ice and remain at } 0^\circ\text{C}$$

$$16\text{ g} \times 335\text{ J/g} = 5,360\text{ J}$$

$$\text{_____ g} \times 335\text{ J/g} = \text{_____ J}$$

$$578 \text{ J} + 5,360 \text{ J} = 5,938 \text{ J} = \text{Hot water must provide}$$

$$\underline{\hspace{2cm}} \text{ J} + \underline{\hspace{2cm}} \text{ J} = \underline{\hspace{2cm}} \text{ J} - \text{Energy Hot Water Must Provide}$$

$$Q = mc\Delta T$$

$$5,938 \text{ J} = 100\text{g} \times 4.18 \text{ J/g}^\circ\text{C} \times \Delta T$$

$$\underline{\hspace{2cm}} \text{ J} = 100\text{g} \times 4.18 \text{ J/g}^\circ\text{C} \times \Delta T$$

$$5,938 \text{ J} = 418 \text{ J}^\circ\text{C} \times \Delta T$$

$$\underline{\hspace{2cm}} \text{ J} = 418 \text{ J}^\circ\text{C} \times \Delta T$$

$$\frac{5,938 \text{ J}}{418 \text{ J}^\circ\text{C}} = \Delta T = 14.4^\circ\text{C}$$

$$418 \text{ J}^\circ\text{C}$$

$$\underline{\hspace{2cm}} \text{ J} = \Delta T = \underline{\hspace{2cm}} ^\circ\text{C}$$

$$418 \text{ J}^\circ\text{C}$$

$$58.5^\circ\text{C} - 14.4^\circ\text{C} = 44.1^\circ\text{C}$$

$$\underline{\hspace{2cm}} ^\circ\text{C} - \underline{\hspace{2cm}} ^\circ\text{C} = \underline{\hspace{2cm}} ^\circ\text{C}$$

$$100\text{g} \text{ at } 44.1^\circ\text{C}$$

$$100 \text{ g at } \underline{\hspace{2cm}} ^\circ\text{C}$$

$$16 \text{ g at } 0^\circ\text{C}$$

$$\underline{\hspace{2cm}} \text{ g at } 0^\circ\text{C}$$

$$Q = mc\Delta T$$

$$mc\Delta T_c = mc\Delta T_h$$

$$16\text{g} \times \Delta T_c = 100\text{g} \times \Delta T_h$$

$$\underline{\hspace{2cm}} \text{ g} \times \Delta T_c = 100\text{g} \times \Delta T_h$$

$$16\text{g} \times \Delta T_c = \frac{100\text{g} \times \Delta T_h}{16\text{g}}$$

$$\text{_____ g} \times \Delta T_c = \frac{100\text{g} \times \Delta T_h}{\text{_____ g}}$$

$$\Delta T_c = 6.25 \times \Delta T_h$$

$$\Delta T_c = \text{_____} \times \Delta T_h$$

$$\frac{6.25}{7.25} = 86.2\% = 0.862$$

$$\text{_____} = \text{_____} \%$$

$$100\% - 86.2\% = 13.8\%$$

$$0.862 \times 44.1^\circ\text{C} = 38.0^\circ\text{C}$$

$$\text{Final Temp} = 0^\circ\text{C} + 38.0^\circ\text{C} = 38.0^\circ\text{C}$$

$$0.\text{_____} \times \text{_____}^\circ\text{C} = \text{_____}^\circ\text{C}$$

$$\text{Final Temperature} = 0^\circ\text{C} + \text{_____}^\circ\text{C} = \text{_____}^\circ\text{C}$$

$$0.138 \times 44.1^\circ\text{C} = 6.1^\circ\text{C}$$

$$44.1^\circ\text{C} - 6.1^\circ\text{C} = 38.0^\circ$$

$$0.\text{_____} \times \text{_____}^\circ\text{C} = \text{_____}^\circ\text{C}$$

$$\text{Final Temperature} \text{ _____}^\circ\text{C} - \text{_____}^\circ\text{C} = \text{_____}^\circ\text{C}$$

$$\text{My Final Temp} = 37.3^\circ\text{C}$$

$$\text{Your Final Temp} = \text{_____}^\circ\text{C}$$