

Thermodynamics

Use these charts as needed in the following calculations: You will need your own paper to complete your calculations.

<u>Substance</u>	<u>Specific Heat (J/g°C)</u>
H ₂ O (l)	4.184
H ₂ O (steam)	2.02
Al (s)	0.89
Fe (s)	0.45

<u>Water</u>
$\Delta H_{\text{fus}} = 334 \text{ J/g}$
$\Delta H_{\text{vap}} = 2260 \text{ J/g}$

8. How much heat is required to warm 275 g of water from 76 °C to 87 °C?
9. PCl₃ is a compound used to manufacture pesticides. A reaction requires that 96.7 g of PCl₃ be raised from 31.7 °C to 69.2°C. How much energy will this require given that the specific heat of PCl₃ is 0.874 J/g °C?
10. A quantity of water is heated from 25.0 °C to 36.4 °C by absorbing 325 J of heat energy. What is the mass of the water?
11. A 500. g sample of an unknown metal releases 6.4×10^2 J as it cools from 55.0 °C to 25.0 °C. What is the specific heat of the sample?