

Unit 3 Handout 3: Solids and Liquids (Chem)

Using **your chart**, answer the following **Specific heat** questions:

$$Q = m(\Delta T)C_p$$

- 1) Find the energy needed to make 2250g of solid salt go from 100 °C to 1450 °C .
- 2) Find the mass of water if 17,291 joules is released as it goes down in temperature from 98°C to 1°C.
- 3) Find the energy needed to raise the temperature of 129g of Aluminum from 130°C to 680 °C.
- 4) What is the temperature change (ΔT) if 56.3g of solid copper is heated using 1576 joules?
- 5) What is the temperature change (ΔT) if 14.8g of liquid chlorine is cooled and releases 457 joules?
- 6) How much energy is needed to raise the temperature of 587g of copper from 100°C to 765°C?
- 7) How much energy is released when the temperature of 230g of gold is dropped from 1060°C to 100°C?
- 8) **Challenge Problem:** What is the final temperature of a sample of copper that is cooled and 1589 joules of energy are released. The initial temperature is 157 °C.

Using **your chart**, answer the following **Heat of Fusion/Heat of Vaporization** questions:

$$Q = m(\Delta H_{\text{fus}})$$

$$Q = m(\Delta H_{\text{vap}})$$

- 9) Find the energy needed to make 650g of solid salt melt .
- 10) Find the mass of water if 17,291 joules is needed to boil the water.
- 11) Find the energy needed to melt 45.9 grams of Aluminum.
- 12) What is the mass of solid copper melted if 13,670 joules is needed?
- 13) How much energy is released when the 230g of chlorine is vaporized?
- 14) What is the H_{fusion} if 14.8g of nickel takes 1051 joules to melt?
- 15) What is the H_{fusion} if 159g of silver takes 4214 joules to melt?
- 16) **Challenge Problem:** How much ice can be melted when 130g of molten Aluminum at its melting point is solidified on the ice, the Aluminum does not go below 660 °C ? **Hint:** figure out the energy given to the ice by the Aluminum.