Calorimetry Worksheets

$$q = mC_p\Delta T$$

Where: q = total heat flow, m = mass, Cp = specific heat, & ΔT = change in temp.

Example:

Calculate the number of joules required to warm 1.00 x 10^2grams of water from 25.0°C to 80.0°C.

Heat energy = mass x specific heat x change in temperature

= (1.00 x 10^2g) (4.184J) (80.0 - 25.0)C° = 23,012 J = 2.30 x 10^4J

Example: g C°

Calculate the number of joules released when 72.5 grams of water at 95.0°C cools to 28.0°C.

Heat energy = mass x specific heat x change in temperature

= (72.5g) (4.184J) (95.0 - 28.0)C° = 20323.78J = 2.03 x 10^4J

Problems: g C°

Solve the following problems on a separate sheet of paper. You must use the set-up illustrated above. Be sure to include units and show how the units cancel out. All final answers should be boxed.

1. How many joules are needed to warm 25.5 grams of water from 14.0°C to 22.5°C?

2. Calculate the number of joules released when 75.0 grams of water are cooled from 100.0°C to 27.5°C.

3. Calculate the heat, in joules, needed to warm 225 grams of water from 88.0°C to its boiling point, 100.0°C.

4. The specific heat of gold is 0.128 J/gC°. How much heat would be needed to warm 250.0 grams of gold from 25.0°C to 100.0°C?

5. The specific heat of zinc is 0.386 J/gC°. How many joules would be released when 454 grams of zinc at 96.0°C were cooled to 28.0°C?