Name _____ Per _____

Calculations involving Specific Heat

Standard: *Students know* how to solve problems involving heat flow and temperature changes, using known values of specific heat and latent heat of phase change.

Specific heat is the energy required to increase the temperature of one gram of a substance by one degree Celsius. Metals have a characteristically low specific heat (little energy is required to increase their temperature). Water has a VERY HIGH specific heat (a lot of energy is required to increase its temperature).

$$c_p = \frac{q}{m \cdot \Delta T}$$

$$q = c_p \cdot m \cdot \Delta T$$

Gold has a specific heat of 0.129 J/(g·°C). How many joules of heat energy are required to raise the temperature of 10 grams of gold from 22 °C to 32 °C?	An unknown substance with a mass of 45 grams absorbs 1500 J while undergoing a temperature increase of 100 °C. What is the specific heat of the substance?
How much energy must be absorbed by 50 grams of water in order to raise the temperature by 20°C? The specific heat of water is on your periodic table.	A 25 gram piece of graphite must absorb 710 J in order to raise the temperature of the graphite from 20 °C to 60 °C. What is the specific heat of graphite?
Copper has a specific heat of 0.385 J/(g·°C). How much energy does a 0.5 gram piece of copper give off as its temperature cools from 55 °C to 15 °C?	80 grams of an unknown substance undergoes a temperature increase of 15 °C after absorbing 600 Joules. What is the specific heat of the substance?