Specific Heat

How much heat can something absorb?

Specific Heat

The amount of energy it takes to raise the temperature of 1 gram of something by 1 °C

Units:

$$\frac{J}{g \cdot °C}$$

Specific Heat

$$Q = mC\Delta T$$

C = specific heat
Q = energy lost or gained
m = mass
ΔT = "delta" T or change in temp

$$Q = m \times C \times (T_{final} - T_{starting})$$

Positive or Negative?

Gaining Heat			
Losing Heat			

Practice Problem #1

$$Q = mC\Delta T$$

A 2 gram sample of a metal was heated from 260 K to 300 K. It absorbed 52 J of energy. What's the specific heat?

$$C = 0.65\ {}^{J}/_{gC}$$

Practice Problem #2

$$Q = mC\Delta T$$

How much heat is needed to raise the temperature of 10 grams of a substance from 40 °C to 60 °C if the specific heat is 3.8 J/ g °C ?

Q = 760 J

Practice Problem #3

$$Q = mC\Delta T$$

A 50 gram piece of hot metal is put into cold water. The metal transfers 5000 J of energy to the cold water. The specific heat of the metal is 6 J/g °C. What is the change in temperature of the metal?

$$\Delta T = -16.67\ °C$$

What work do I show?

LIST VARIABLES WITH UNITS
PLUG THEM INTO THE EQUATION
FINAL ANSWER WITH UNITS

For #1-4 on the handout you <u>MUST:</u>

- Circle the variables
- Underline what you are solving for
  (or you may use two colors of highlighter)