

# ThermoHW#1

name

1. How many joules does it take to raise the temperature of a piece of copper that is 307 grams and at 298 K, until it warms up to 327 K? The specific heat capacity for copper is  $0.391 \text{ J/g}\cdot\text{K}$
2. How much energy does it take to warm up 50.0 mL of pure water from 281.5 K to 289.9 K?
3. The "C" of "Hg" is  $0.140 \text{ J/g}\cdot\text{K}$ . How much heat is lost from 356 grams of mercury when it changes temperature from 369 K to 305 K?
4. If 4675 Joules are absorbed by 315.0 grams of unknown metal at 270.4 Kelvin and the metal temperature rises to 312.2 Kelvin, what is the specific heat capacity constant for this metal?

# ThermoHW#2

name

1. Fruit Loops cereal is excellent (that's qualitative). A serving of 38 grams contains 125 Calories. Convert that amount of energy into calories, joules, and kiloJoules.
2. One Oreo cookie has 53 Calories. How many calories, joules, and kiloJoules are in TWO Oreo cookies?
3. How many joules of energy need to be absorbed by 1372 grams of ice to melt at 273K?
4. If 3.25 grams of steam condenses onto your hand, how many joules of energy are released as this steam changes phases into a liquid?

# ThermoHW#3

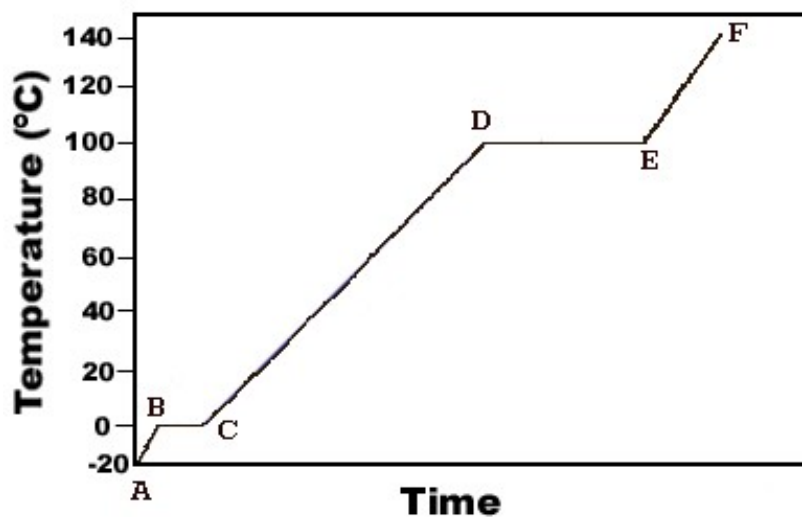
name

1. Using the heating curve for water below, write increasing, decreasing or steady for each box for the temperature, kinetic energy, and potential energy.

	Phase or phases	Temp	KE	PE	Corresponding thermochemistry formula
BC					
CD					
EF					

2. Why is BC shorter than DE?

Use the numbers 334 & 2260 in your answer.



3. What formula do you need to use if your problem says H<sub>2</sub>O changes from point D to point E?
4. What formula do you need to use if your problem says H<sub>2</sub>O changes from point C to point D?
5. What 2 formulas do you need to use if your problem H<sub>2</sub>O changes from point B to point D?

# ThermoHW#4

name

1. State the law of conservation of energy
2. Define specific heat capacity.
3. How KILOJOULES will it take to vaporize 311 grams of  $\text{H}_2\text{O}$ ? (2 steps: phase change, then  $\text{J} \rightarrow \text{kJ}$ )
4. If 870. Joules of heat is added to 6.8 grams of olive oil at 294 K, the temperature rises to 358 K.  
What is the specific heat capacity constant of olive oil? (solve for C)
5. How much heat in Joules is required to raise the temperature of 454 grams of Hg from 293 K  $\rightarrow$  323 K?  
The specific heat of Hg =  $0.140 \text{ J/g}\cdot\text{K}$
6. How many Joules is required to raise the temperature of 454 grams of  $\text{H}_2\text{O}$  from 293 K  $\rightarrow$  323 K?

# ThermoHW#4

name

1. On the back of this page: Draw a bomb calorimeter then write a paragraph explaining how it works.
2. If 175 ml of pure water at 278 K is heated with 59,252 Joules of heat energy. What is the final temperature of this water?