T-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 J/g·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 J/g·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?

Name: _____

T-2

Simple Thermochem Conversion problems…
Write formulas for Questions 3 and 4.

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. Cashews are my favorite nuts. A serving of 28 grams contains 165 Calories.
How many calories, joules, + kiloJoules are in 64.0 grams? This question is NOT about 165 Calories! Read!

3. How many joules of energy need to be absorbed by 1372 grams of ice at 273K to melt?

4. If you touch 3.25 grams of steam and it all condenses onto your hand, how many joules of energy are released as this steam changes phases into a liquid?

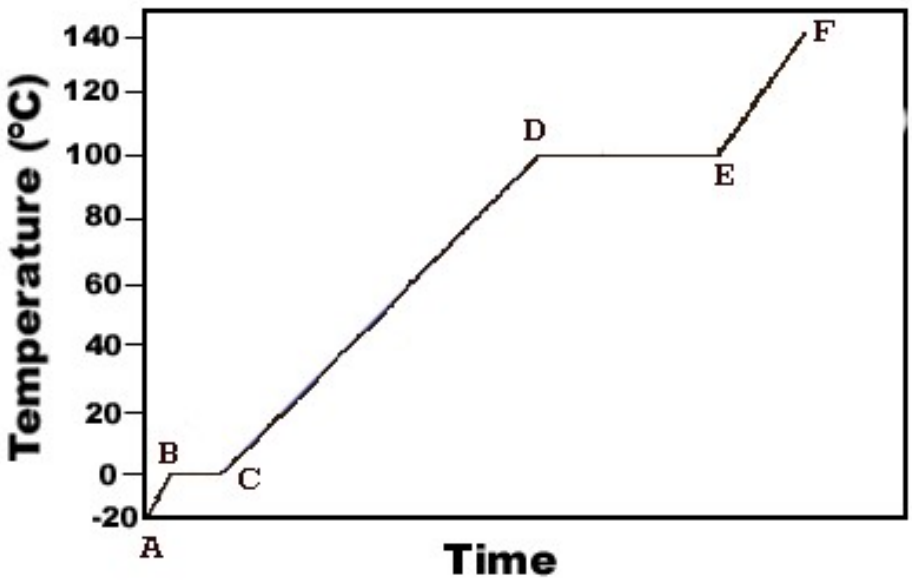
T - 3

Name: _____

More Thermo-Chem Problems

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	Formula used in a thermochem problem
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_2O changes from point D to point E? _____

4. What formula do you need to use if your problem says H_2O changes from point C to point D? _____

5. What 2 formulas do you need to use if your problem H_2O changes from point B to point D? _____

T-4

Name: _____

Some Definitions and more math…

1. State the law of conservation of energy

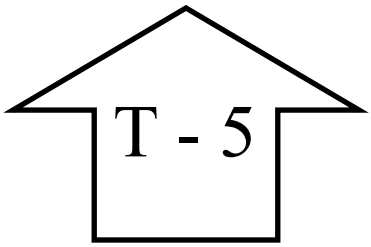
2. then define specific heat capacity.

3. How KILOJOULES does it take to vaporize 311 grams of H_2O? (two steps: phase change, then conversion)

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 to 323 K? The specific heat of Hg = 0.140 J/g·K

6. How much heat in Joules is required to raise the temperature of 454 grams of H_2O from 293 K to 323 K?



Name: _____

1. On the back of this page: Draw a bomb calorimeter then write a paragraph explaining how it works.

2. 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?