temperature:
- a measure of the _____________ ____________ energy of the particles in a sample of matter
- does not depend on the amount of ______________ in the sample
- symbol is _________; unit is __________

heat:
- ____________ amount of ______________ energy that flows because of a difference in ______________.
- depends on ______________ of sample
- symbol is __________ ; unit is ______________ (1 cal = 4.18 ______ )

Specific heat capacity:
- amount of ___________ required to raise the ______________ of 1 ________ of substance 1 ________
  - symbol is ________ ; unit is __________

\[ Q = m \times C \times \Delta t \]

When heat (Q) is absorbed by a system, part of it (C) goes into storage as ____________ energy and part of it is used to make the molecules move around ____________, raising the ________________ (\( \Delta t \)).

Why does sand get hotter in the day and colder at night than the water?
I: Heat is being used to raise the ____________ of the ________.

\[ Q = \text{____} \times \text{____} \times \text{____} \]

II: Heat is being used to turn solid to ______________. (phase change)

\[ Q = \text{____} \times \text{____} \]

heat of fusion - ______________ required to change 1g of _________ to ______________

III: Heat is being used to raise the ____________ of the ________.

\[ Q = \text{____} \times \text{____} \times \text{____} \]

IV: Heat is being used to turn liquid to ______________. (phase change)

\[ Q = \text{____} \times \text{____} \]

heat of vaporization - ______________ required to change 1g of _________ to ______________
endothermic change: (___________ is an example.)
• ___________ or ___________ change in which a ___________ absorbs ___________ from its _________________
  • ______ → _______ (Heat seems to _________________.)
  • _____ of system _______________ and it becomes less _______________.
  (___________________ is another example.)

exothermic change:
• physical or chemical ___________ in which a system _______________ _______ heat to its _________________
  • ______ → ______
  (Heat seems to _______________ out of _________________) 
  • _____ of system _______________ and it becomes ____________ stable.

Ex. - Why does your skin feel cool when you get out of the pool?

Think about these steps to answer the question:

Identify the system - _______________
goes from liquid (____ P.E.) to ______ (____ P.E.).
This is an _________________ change. In this
type of change, the system (the water) ___________ heat from the surroundings.

Identify the surroundings - _______________
Your skin feels __________ because it ___________ heat. The heat was used to ___________ the water.

Why do farmers spray fruit on trees with water when the temperature is going to drop below freezing? Identify the system and surroundings and make the statements about them (as done above.)
As molecules get closer, their electron clouds ______ each other, and their P.E. (increases, decreases).
The ______ complex is highest point in P.E.
The energy required to reach the complex is called the __________ energy.

Products are (higher, lower) in P.E. than reactants and are (more, less) stable.
This reaction is ______ thermic.

Problem Set #1: Draw the P.E. diagram shown and label the following:
reactants, products, activation energy, activated complex, $\Delta H_r$ (+ or -)

Products are (higher, lower) in P.E. than reactants and are (more, less) stable.
This reaction is ______ thermic.

When Act E is high, the reaction is (slow, fast).

Sketch a diagram of these reactions:
slow, exothermic faster, endothermic faster, exothermic

Chemistry Quiz:
CR1. CR2. 1. 2. 3.