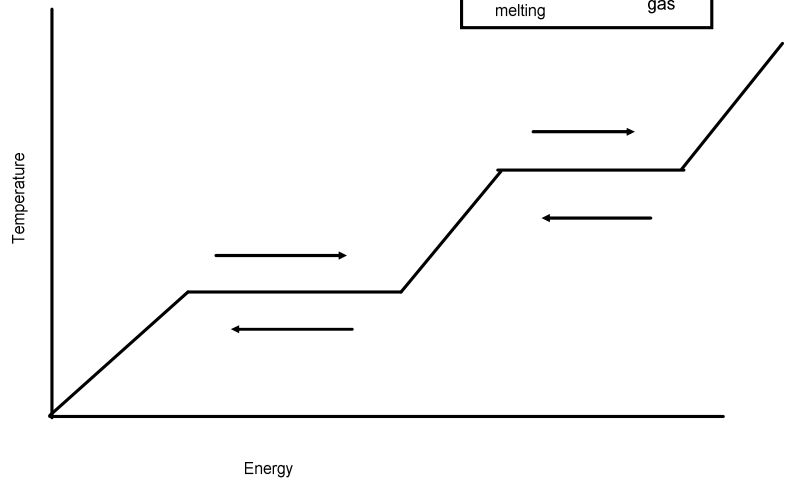
label where kinetic energy is changing
label where potential energy is changing
label heat of fusion and heat of vaporization

label

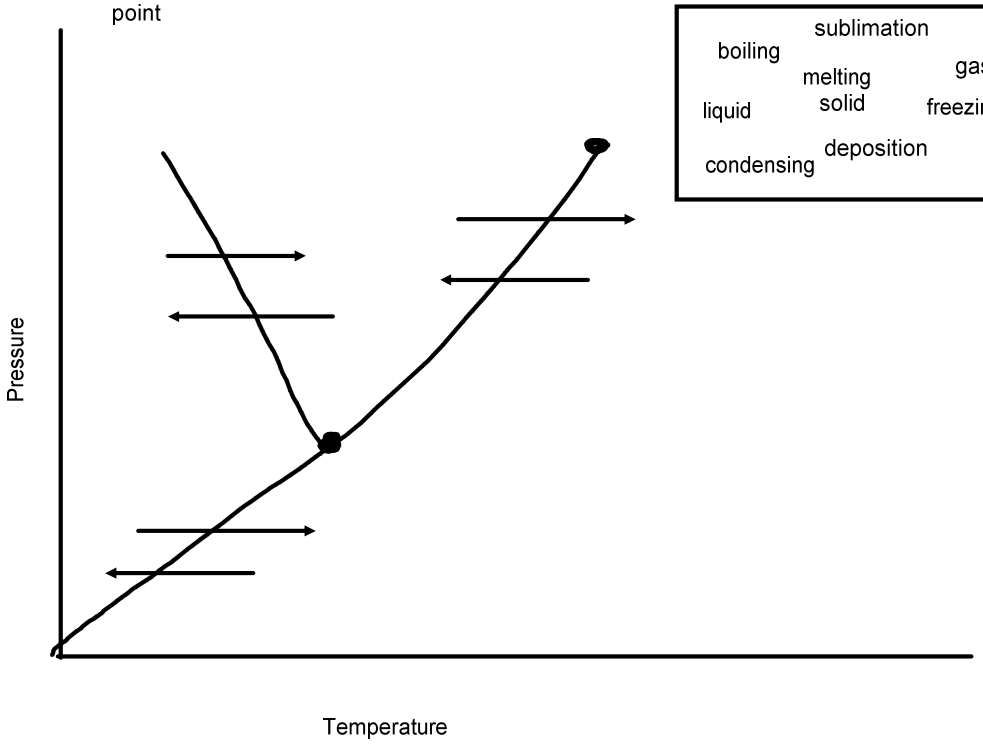
freezing solid
condensing boiling
liquid
melting gas



label the critical point and triple point

label

sublimation
boiling gas
melting
liquid solid freezing
deposition
condensing



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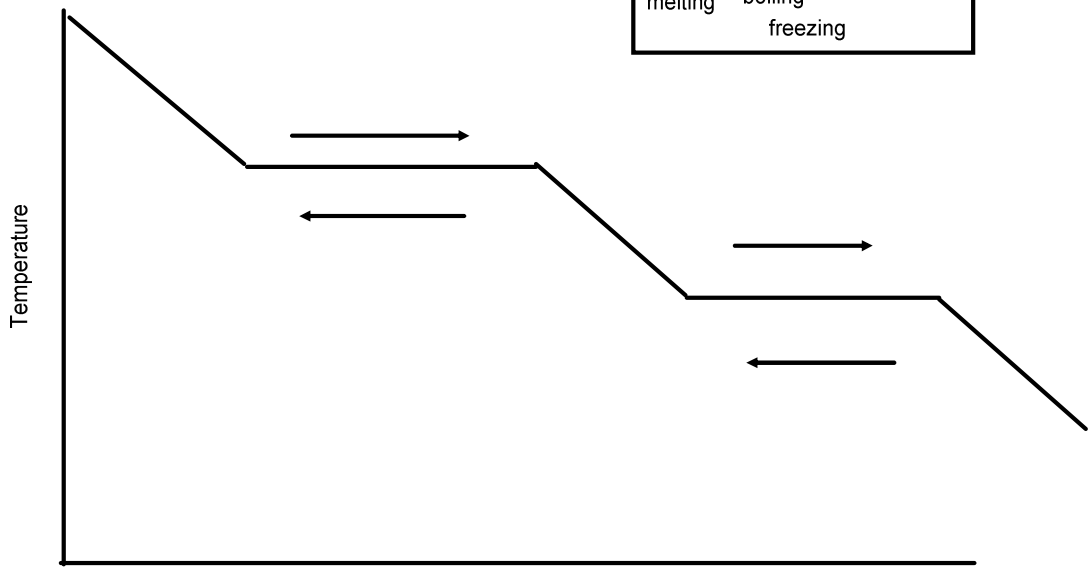
gas solid condensing liquid melting boiling freezing



endothermic | exothermic

Thermodynamics Hints

q is heat energy or energy (Joules)
there are three equations
use reference table for equations and constants

- $q=mc\Delta T$ does **not** change state of matter
- there will be two temperatures

  $\Delta T = T_f - T_i$

  if energy is released then q will be negative

  use reference table to find C
  water has three options based on temperature
  solid for less than 0 ℃
  liquid for 0 ℃ to 100 ℃
  gas for greater than 100 ℃

use q = mH only **one** temperature or **no** temperature
and the water is **changing states of matter**

- $q = mH_v$ use if water is boiling or condensing
  H_v is on reference table
  if boiling q will be postive
  if condensing q will be negative

- $q = mH_f$ use if water is melting or freezing
  H_f is on reference table
  if melting q will be postive
  if freezing q will be negative