3 Questions

Unit 7: Thermodynamics
Topic: Chemistry Review

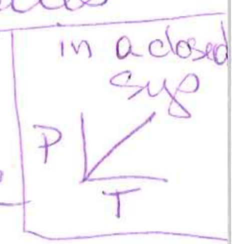
Temperature = average Kinetic Energy (KE)
(@ macroscale level)

T ≠ heat
heat = flow of E in/out system
↳ container
closed sys = lid
E not go in/out

1st Law of Thermo
Thermal E gain or loss = E transfered

KMT = Kinetic Molecular Theory
= molecules "always" move = **3rd Law of Thermo**
solid = least movement ⟶ gases = most more
is why 0 K is "theoretical"
↑ absolute zero = no movement

as T↑ = ↑ average KE
= ↑ movement of molecules
= ↑ velocity
= ↑ # of collisions
= ↑ in Pressure
= a Force F_p
F_p is due to # of collisions with inside of container



E transfers from high E to low E = **2nd Law of Thermo**
lots motion ⟶ little motion
"hi T" ⟶ low T
"hot" ⟶ "cold"

"heat em up"
speed em up

"hot" molecules release* E to "cold" molecules
slow — speed up
equilibrium = same T

Entropy (S) = amount of disorder of — Disorder of the Universe is ↑
↑T, low P = more spread out faster moving chaotic particles (Gas = ↑S)

measure T

Endothermic

E enter
E in
E absorbed by system
feels "cold"

can't have one without the other ~ are a pair ~

Exothermic

E exit
E out
E released by system
feels "hot"

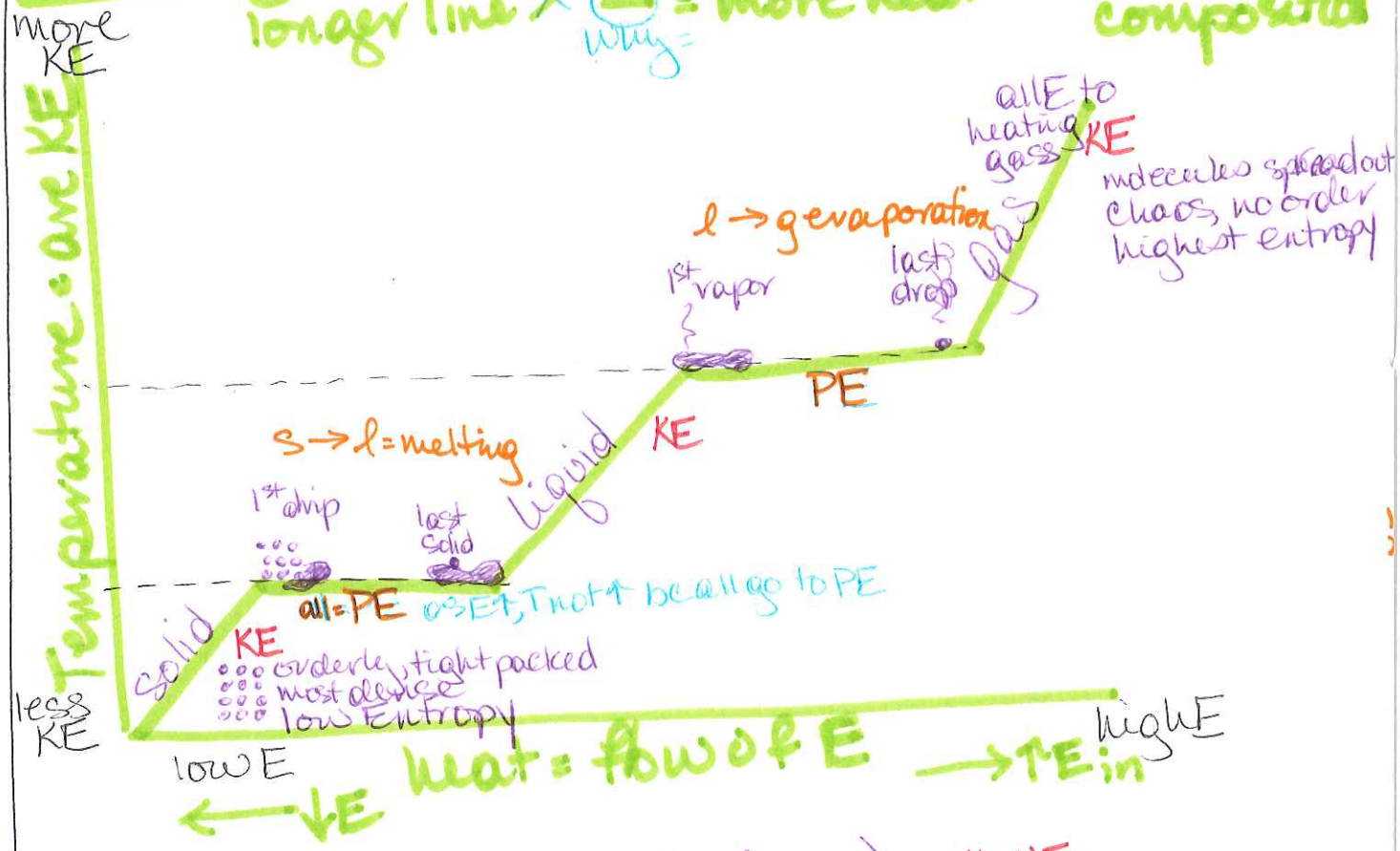
Never evaluate by how "feels"; only by flow of E

ex: ice melts in hand
E: endo → exo

ex: fire heats a room
E: exo → endo

Heating Curve = different for each substance due to composition

longer line ✗ ⊖ = more heat
why =



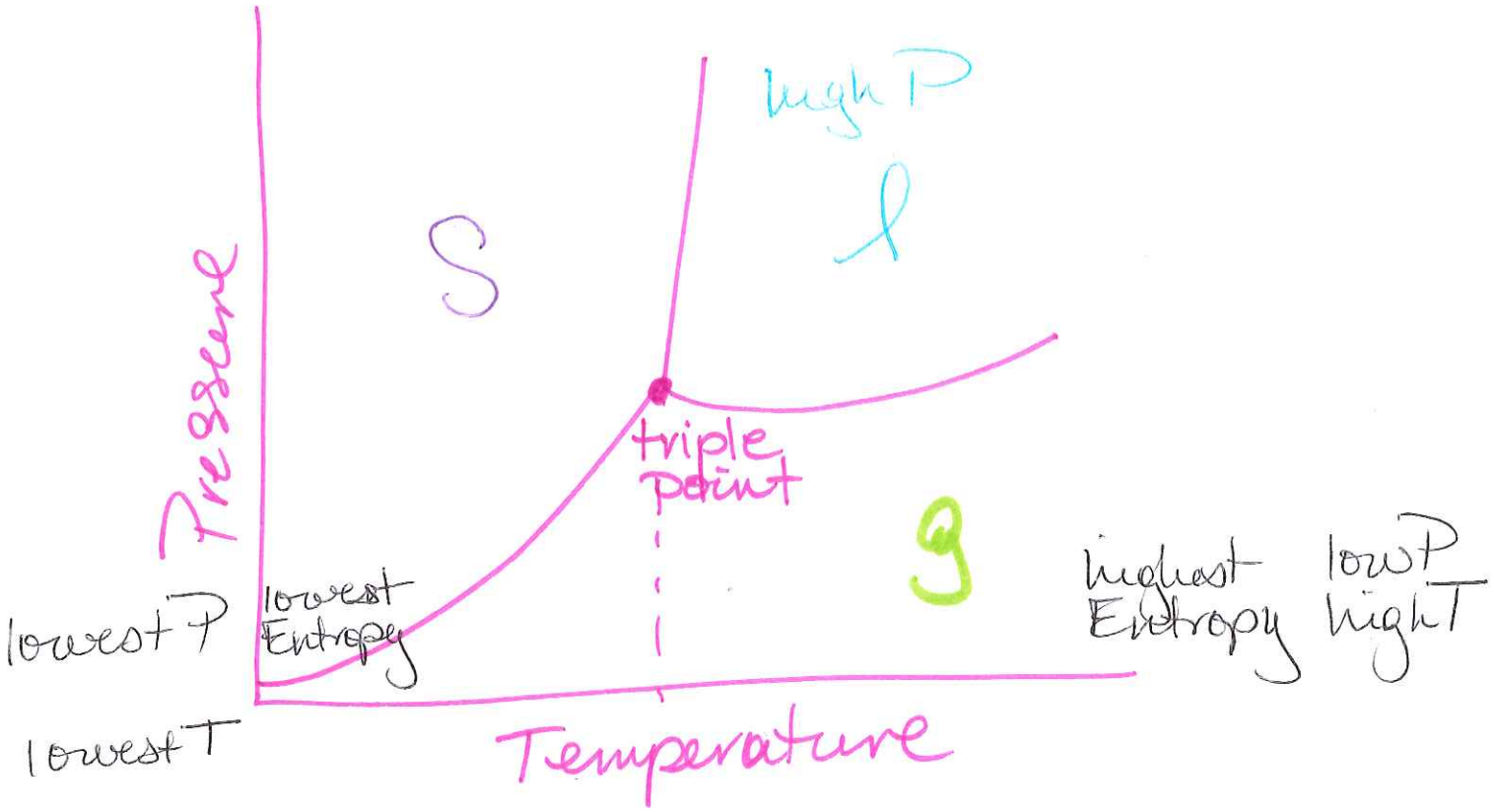
— = state of matter (s, ℓ, or g) = all KE

— = phase change (s ↔ ℓ freezing / melting) etc
↳ on plateau = PE
↑E ≠ ↑T bc not KE only PE

"Phase change; plateau, PE"

Phase Diagrams

P ↙ T



- triple point = T at which all 3 states of matter exsist
  = same T dif entropies

S → l → g

lowest entropy → greatest entropy