

1

## YOYO – Round 2

Looking at the gif of the dog sledding, make a prediction, which process is spontaneous, which is non-spontaneous. Write at least 2 complete sentences explaining your reasoning



2

## Spontaneous Reactions vs Non-spontaneous Reactions

- **A spontaneous reaction** is one that is able to proceed without needing an outside source of energy (exothermic reaction)
- **A nonspontaneous reaction** needs an input of energy. (endothermic reaction)



3

## Spontaneous Reactions happen when...

1. **Less energy** (lower enthalpy): exothermic reactions are favored
2. Greater randomness, disorder

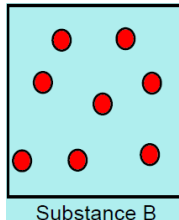
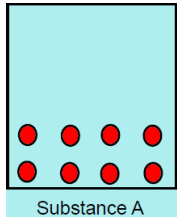
4

# Entropy

• Entropy is the measure of **disorder or randomness in a system.**

• In nature **greater** entropy is favored.

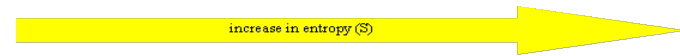
Turn and Talk (30 sec)



1. Which substance has greater entropy and why?
2. Draw all of the states of matter, which state has the greatest degree of entropy?

5

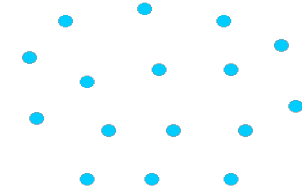
# Entropy in a Solid, Liquid and Gas



Solid



Liquid



Gas

6

# Which picture has more entropy?



OR



7

# Turn & Talk

1. Which room has more entropy?
2. Explain your current room right now in terms of entropy.



8

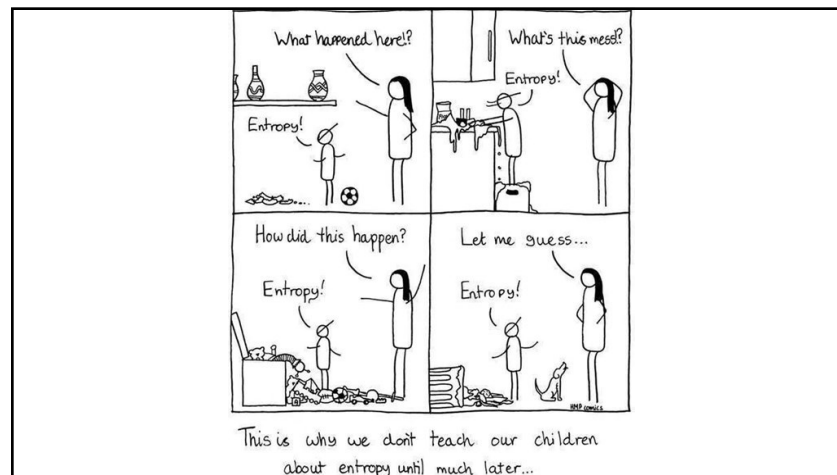
## Entropy Increases...

1. When the **number of molecules** increases during a



2. With an increase in **temperature**
3. When a **gas** is formed from a liquid or a solid.
4. When a liquid is formed from a solid.

9



10