

# 1 | Entropy

#flo #disorganized

Statistical measure of randomness in a reaction of systems.

Entropy measured in microstates — the spread of energy in states. Greater numbers of microstates means that there is more entropy

To think about this, think about states of matter:

- Gas => Most Entropy
- Water => Meh Entropy
- Solids => Least Entropy

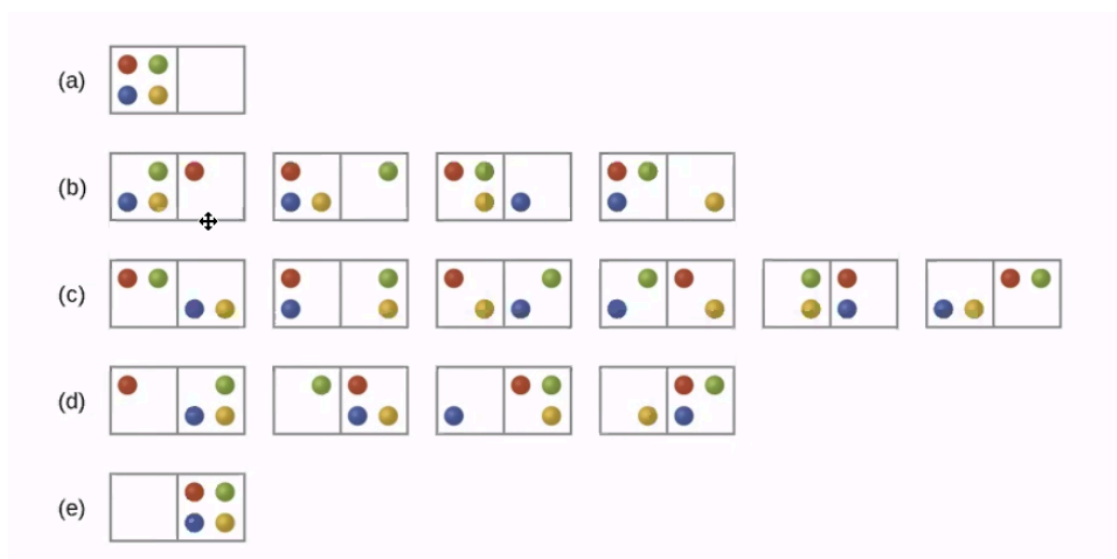


Figure 1: Screen Shot 2020-10-02 at 2.29.24 PM.png

In this image, states (a) and (e) are least likely. This is because \*the greater the spread, the greater the entropy; systems like to have an increase of entropic state as much as it is possible.\*

Second Law of Thermodynamics In the universe, entropy is increasing due to chemical processes.

## 1.1 | Gibbs Free Energy

$$\Delta G = \Delta H - T\Delta S$$

Change in gibbs free energy is equal to change in enthalpy minus the change in entropy multiplied by the temperature.

$\Delta H$	$\Delta S$	$-T\Delta S$	$\Delta G$	Spontaneity?	Examples?
+	-	+	+	Non-Favorable Nonspontaneous: creating less entropy, heat is going in.	TBD
-	+	-	-	Favorable Spontaneous: creating more entropy, heat is flowing out.	Combustion Reaction
-	-	+	$\pm$	Low Temp: Spontaneous High Temp: Nonspontaneous	
+	+	-	$\pm$	High Temp: Spontaneous Low Temp: Nonspontaneous	