

Source: [KBhBIO101Enzymes](#)

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

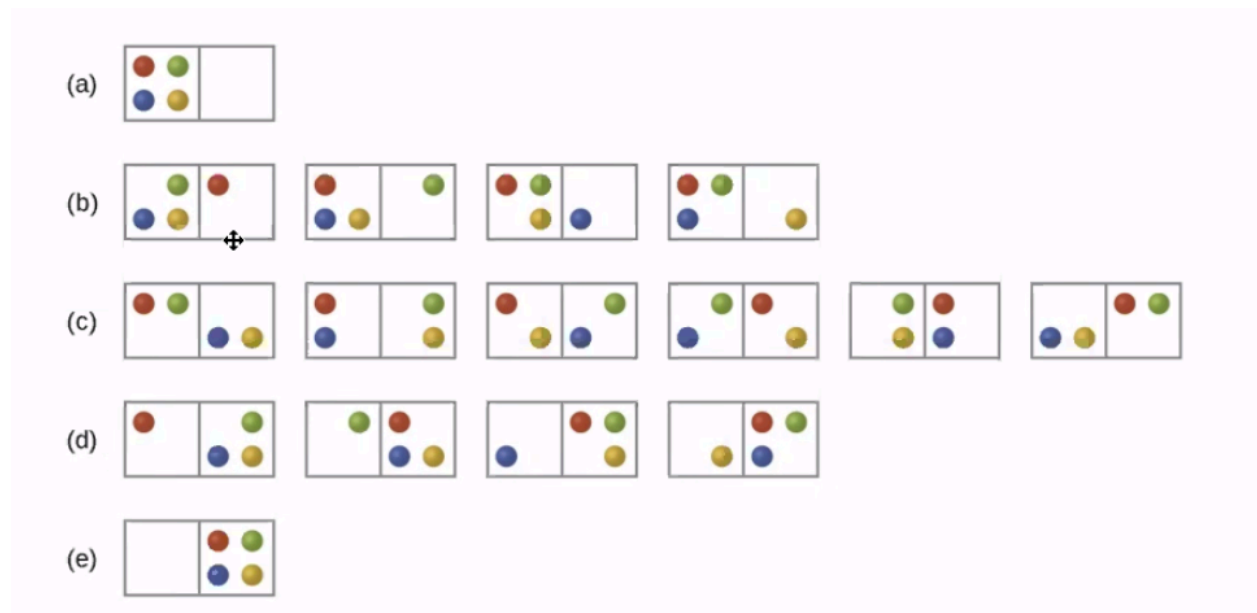


Figure 1: Screen Shot 2020-10-02 at 2.29.24 PM.png

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.**

Definition 1 · **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.

| ΔH | ΔS | $-T\Delta S$ | ΔG | Spontaneity? | Examples? |
|------------|------------|--------------|------------|---|--|
| + | - | + | + | Non-Favorable Nonspontaneous: creating less entropy, heat is going in. | TBD |
| - | + | - | - | Favorable Spontaneous: creating more entropy, heat is flowing out. | Combustion Reactions (blowing things up) |
| - | - | + | \pm | Low Temp: Spontaneous High Temp: Nonspontaneous | |