46.1 Equilibrium

Chemistry

Summarize main points from each video.

Video Title / topic _____

Video Title / topic _____

Video Title / topic _____

Topic Introduction

Summarize your understanding of each paragraph.

Here, we examine equilibrium (in chemistry). This expression is very similar to a word used in life sciences. Specifically, homeostasis is frequently used in the Life Sciences. Homeostasis and equilibrium are closely related. But, they are not the same.

If homeostasis refers to the entire internal environment, equilibrium is narrowed to specific mechanisms. Equilibrium references a state of balance within a system, such as sweating to cool off following exercising.

Although homeostasis and equilibrium are closely related, they are not the same state and can't be used interchangeably in every circumstance. Homeostasis is usually only used in the biology or animal sciences arena.

Equilibrium can include systems in biology, animal science, chemistry, economics or even sociology. Understanding and using the correct term is vital for clarity purposes.

https://education.seattlepi.com

Read/Summarize Text

1. **Read the passage.**
2. **Underline key expressions in each sentence.**
3. **Re-write each word (or expression) you underlined.**
4. **Summarize the passage.**

Extract from "Homeostasis, Steady States, and Equilibria".

1

2

A beaker of distilled water contains water molecules and it's ion products in a chemical equilibrium. Without putting energy into the system it stays just as it is. Change the system, such as by tossing in some hydrochloric acid, and the balance changes. However, within a short time complete ionization of the HCl takes place and you again have a chemical equilibrium (with higher concentration of hydrogen ions, a.k.a. lower pH). The key concept is that any system is most stable at its lowest free energy state under current conditions. When that state is reached the system is at equilibrium. In a steady state, energy is put into the system constantly in order to maintain a higher free energy state than at equilibrium.

https://www.ruf.rice.edu

Re-write words you underlined

3

Using a complete sentence, summarize or rephrase the passage

4

Read Text for Comprehension

Read this article for deeper understanding. No summary is required, although you may want to circle, underline, or mark key ideas and words.

Equilibrium constant

The equilibrium constant of a chemical reaction is the value of its reaction quotient at chemical equilibrium, a state approached by a dynamic chemical system after sufficient time has elapsed at which its composition has no measurable tendency towards further change.

For a given set of reaction conditions, the equilibrium constant is independent of the initial analytical concentrations of the reactant and product species in the mixture. Thus, given the initial composition of a system, known equilibrium constant values can be used to determine the composition of the system at equilibrium. However, reaction parameters like temperature, solvent, and ionic strength may all influence the value of the equilibrium constant.

A knowledge of equilibrium constants is essential for the understanding of many chemical systems, as well as biochemical processes such as oxygen transport by hemoglobin in blood and acid-base homeostasis in the human body.

Stability constants, formation constants, binding constants, association constants and dissociation constants are all types of equilibrium constants.

https://en.wikipedia.org/wiki/Equilibrium_constant

Teen easy-speak

The constant is a number at chemical equilibrium. Chemical equilibrium is reached when a lot of time has gone by and no more changes happen.

This number doesn't really care about the starting concentrations (of stuff in the mixture).

What this means is that the number is really useful. It can help figure out the concentration of everything – at equilibrium.

The reason knowing about equilibrium is important is because it is used in a whole lot of different sciences. One of them is biochemistry and things dealing with oxygen levels in blood.

There are several types of equilibrium constants. They are listed in the last paragraph up above.

See ya.

Honeycutt Science

Interpret a Graph

Write the title of the graph _____

Circle the type of chart this represents

Bar Chart *Line Chart* *Pie Chart* *Other*

If applicable,

What does the X-axis represent _____

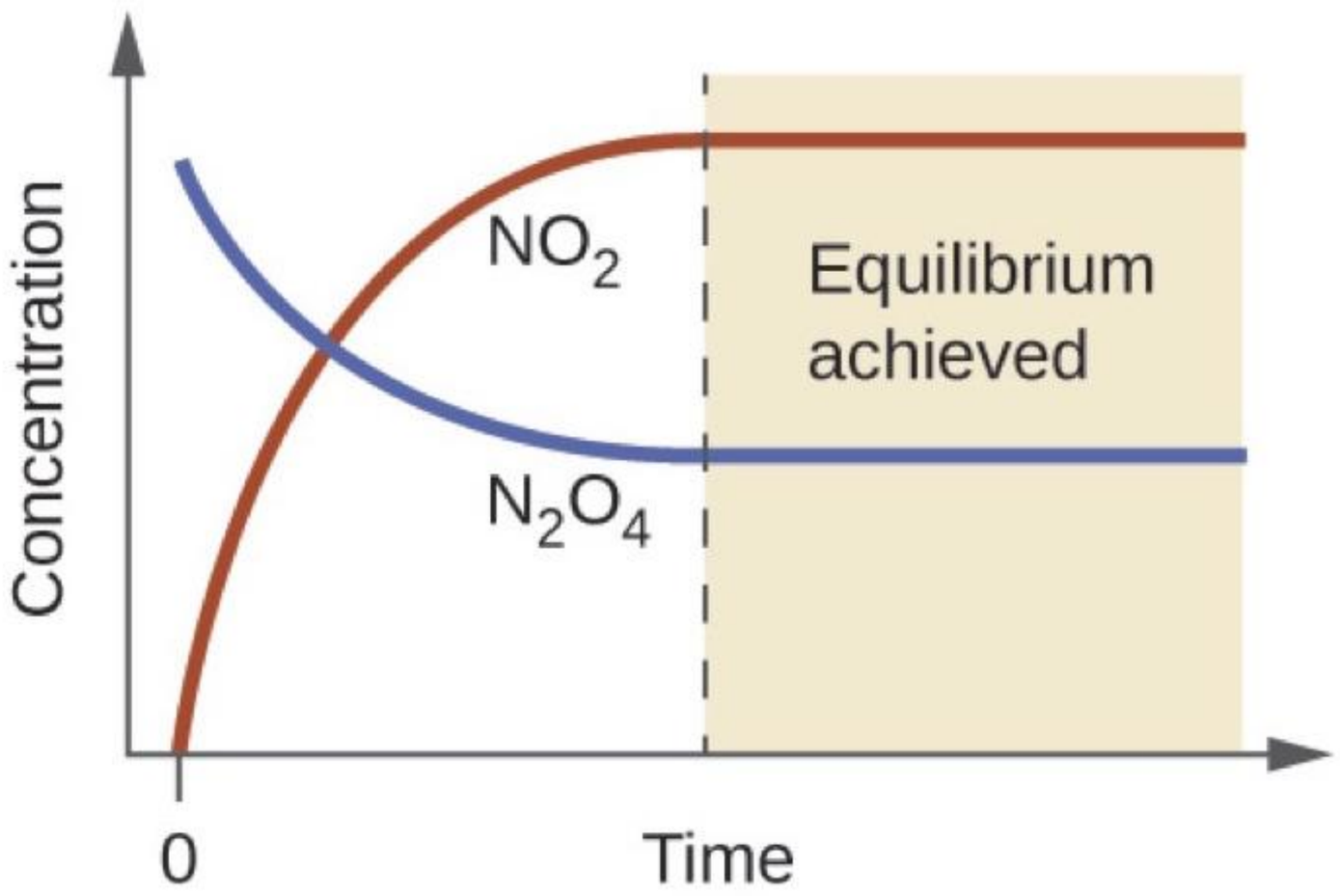
What does the Y-axis imply _____

Summarize what this graph represents or conveys

_____

https://www.khanacademy.org

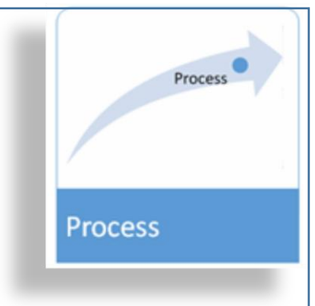
From The equilibrium constant K (article) | Khan Academy



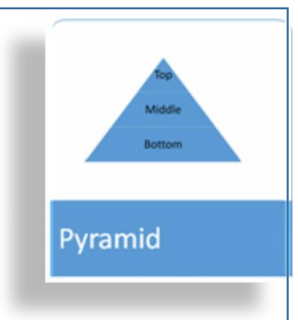
Make a Poster

In the space provided, illustrate concepts presented in *this topic* through the use of four diagrams suggested.

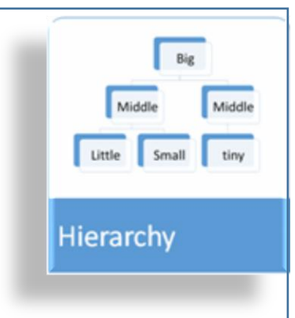
Process



Pyramid



Hierarchy



Relationship