The Science of Biology

U.S. Fish and Wildlife

📖 Define *Biology*.

- Biology is the study of life.

🗣Need to understand that it includes **concepts**, **principles**, and **theories** that allow people to understand our **natural environment** as the **core** of biology.

📖 Have biologists answered almost all questions about life?

📖 Yes or No? NO

📖Need to understand that life on Earth includes **not only common** organisms you notice every day, but also **distinctive** life forms that have **unusual behaviors**.

📖 Define *One General Principle* in Biology.

📖That living things do **not** exist in **isolation**.

🗣They are all **functioning** parts in our **dynamic environment**.

🗣Depend on **living** and **nonliving** things to **aid** in their **survival**.

🗣The importance of biologists studying the interactions of living things.

- Always involves the study of **other** living organisms and how they interact.

- Involves **plants** and **animals** supplying **humans** with **food** and **raw** materials such as

Cotton

Wood

Oil

- Provides us the **essential** **oxygen** in the air from plants in order for humans to live.

📖The importance of biologists studying problems and propose solutions.

- Leads to **advances** in **medical** **treatment** and **disease** **prevention**.

- Reveals ways to help **preserve** organisms that are in **danger** of **extinction**.

🗣Provide **knowledge** to help humans **sustain** our **Earth**.

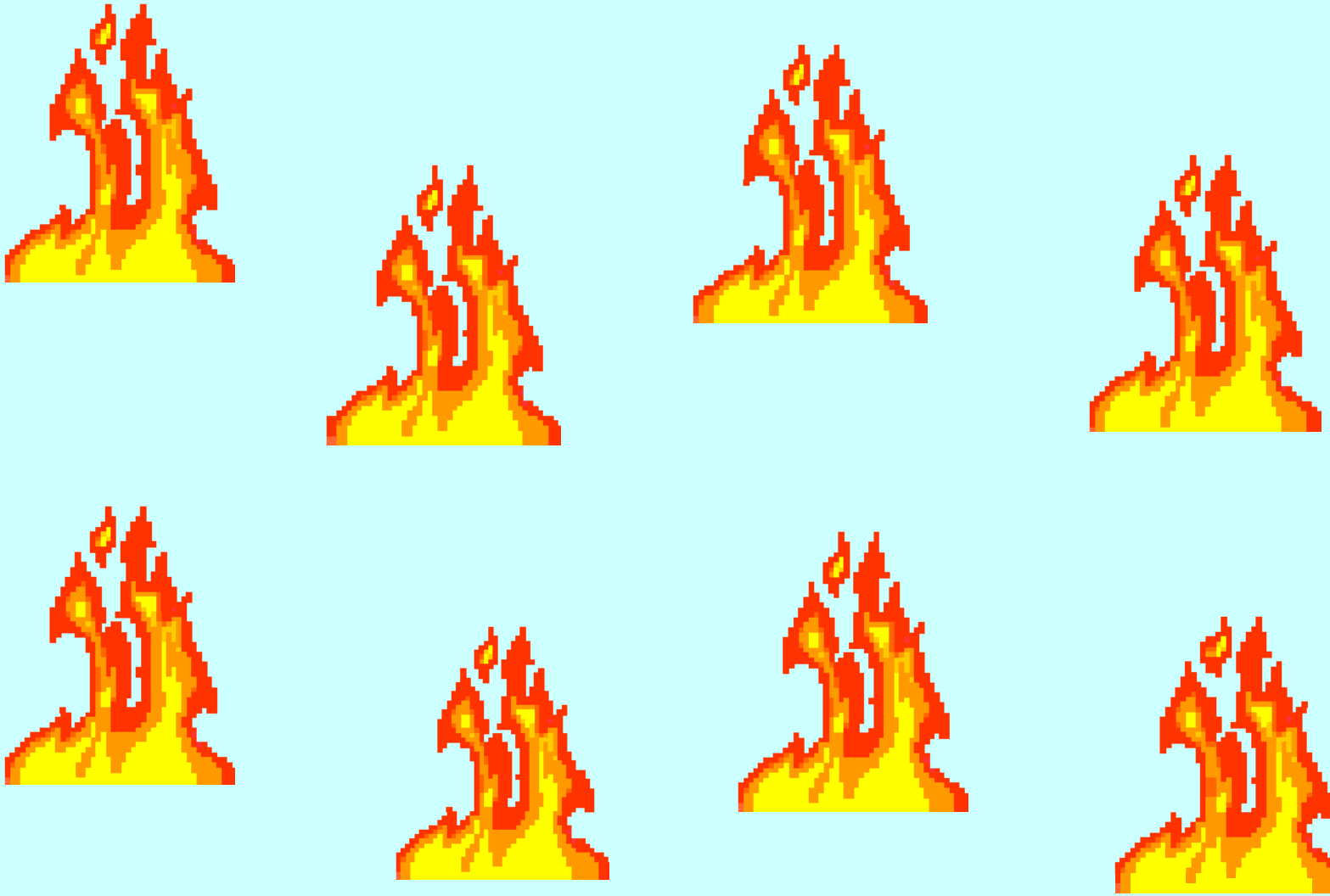
🗣What are some questions you may ask yourself when **identifying life**?

Does it grow?

Does it move?

Does it reproduce?

Are Flames Alive?



🗣 Characteristics of Life

- Need to understand that sometimes **nonliving** things have **one** or **more** of life's **characteristics**.

📖 Characteristics of Life

📖 Define ***organism***.

❖An organism is anything that possesses **<u>all</u>** of the characteristics of life.

📖 Characteristics of Life

📖 **List the <u>4</u> Characteristics of Life**

1.) All living things have an ***orderly structure***.

2.) All living things ***produce offspring***.

3.) All living things ***grow and develop***.

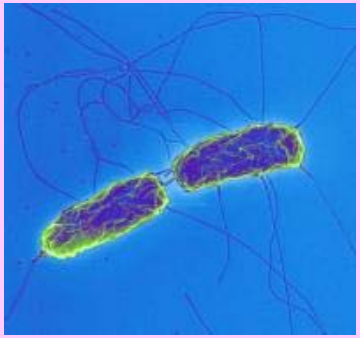
4.) All living things ***adjust to changes*** in their environment.

🗣Alive or Not Alive?

🗣Alive or Not Alive?

📖Living Things are Organized

📖Define ***organization***.



❖Organization is when a living thing shows an **orderly** structure.

🗣Whether an organism is made up of **one** cell or **billions** of cells, **all** its parts **function together** in an **orderly** living **system**.

📖Living Things Produce Offspring

📖 Name another term meaning “production of offspring”.

REPRODUCTION

📖 Define ***species***.

❖ Species is a group of organisms that can interbreed and produce fertile offspring in nature.

- Living Things Produce Offspring

- Need to understand that if species **never** reproduce, it would mean an **end** to their **existence**.

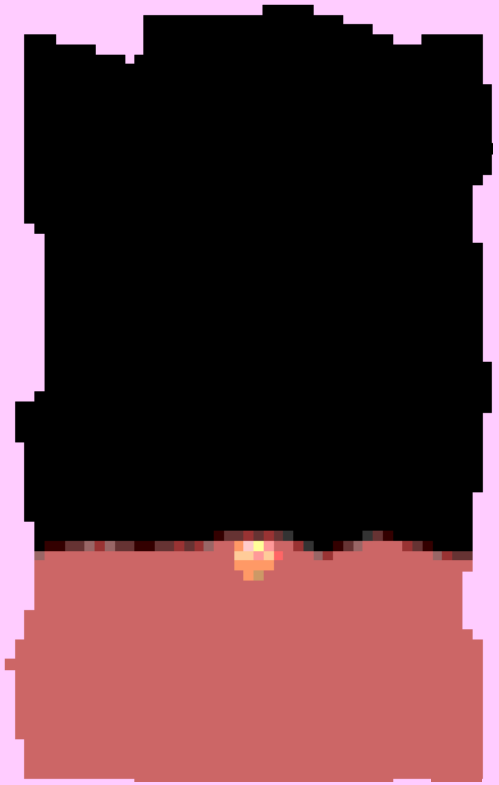
📖Living Things Grow and Develop

📖 Define ***growth***.

❖Growth results in an **<u>increase</u>** in the amount of living material and the **<u>formation</u>** of **<u>new</u>** structures.

📖Living Things Grow and Develop

📖 Define ***development***.



- Development is **all** the **changes** that take place during the **life** of an organism.

📖Living Things Adjust to Changes in their Environment

📖Define an organism's ***environment***.

❖ Environment is an organism's **surroundings**.

📖**Includes air, water, weather, temperature**, any other **organisms** in the area, and **many other factors**.

📖Living Things Adjust to Changes in their Environment

📖 Define **adaptation**.

📖Adaptation is any **inherited** structure, **behavior**, or **internal** process that enables an organism to **respond** to environmental factors and **live** to produce offspring.

📖Living Things Adjust to Changes in their Environment

📖Define ***stimulus***.

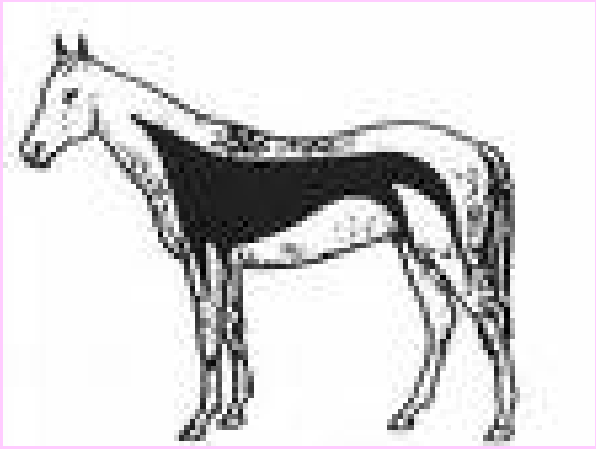
❖Stimulus is **anything** in an organism's **external** or **internal** environment that **causes** them to react.

📖 Define ***response***.

❖The **way** an organism **responds** to the stimulus.

🗣Why do organisms undergo stimulus and response?

❖Allows organisms to maintain **<u>homeostasis</u>**.



- Define ***homeostasis***.

- ***Homeostasis*** is the **<u>regulation</u>** of an organism's **<u>internal</u>** environment to maintain conditions **<u>suitable</u>** for its **<u>survival</u>**.