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* **Chapter 1 Lesson 1: The Science of Biology**
  + What Science **IS** and **is NOT**:
    - You need to understand that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is always \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
    - Science is a human process of trying to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ around us.
    - Like all Science, Biology is a process of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
      * It is based on both \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + **What are the GOALS of science?**
    - The goal of science is to provide natural and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ explanations for natural events.
    - Science also uses explanations that are supported by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to understand patterns in nature.
      * Scientific explanations can then be used to make useful \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ about natural events.
  + **Can Science answer ALL questions?** 
    - \_\_\_\_\_\_\_\_\_\_\_
    - Some answers to questions are left up to\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
      * **Examples:**
  + **Scientific Methodology: What does Methodology mean????**
    - Methodology is a system of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ used in a particular area of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
    - So Scientific Methodology is the new “trendier” version of the old school term =­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
      * **The Scientific Method:**
        + Common set of steps that biologist and other scientist use to gather info and answer questions.
        + It is not a rigid approach, it is not fixed. It is actually very \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (common sense).
        + **Scientific Methodology: Broken down….**

All scientific inquiries begin with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Observation:**

From our observations:

Two Types of **Data**:

**Qualitative** =

**Quantitative** =

**Hypothesis =**

A hypothesis leads to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of what would happen if the hypothesis is valid.

**Testing a Hypothesis:**

One test of the hypothesis is not enough. Why????

Experiments must be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Experiment =**

**Constants =**

**Variables =**

**Independent Variable**

This is what you change.

It is the thing that you are\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Dependent Variable**

Are observed and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ during and experiment.

They are the changes that occur because of what \_\_\_\_\_\_\_\_\_\_ changed.

Dependent variables depend on the independent variable

***Experiment: Example and Practice***

* Constants: \* Define Control:
* Independent Variable:
* Dependent Variable:
  + - **Scientific Theory**:
      * A scientific \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the natural world that has been \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
      * They come from many repeated \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and include several well \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
      * Important… A Scientific Theory can \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ as more research is done and more data is collected.

**Review, Synthesize, Infer and Summarize:**

1. **In your own words, define the term science.**
2. **Why is there no one correct process of scientific investigation?**
3. **Why are hypotheses so important to controlled experiments?**
4. **What is a scientific theory?**
5. **How does a theory differ from a hypothesis?**

**Chapter 1 Lesson 2: Science in Context**

* **Lesson Summary: The process of science includes…**
  + Exploration and discovery
  + Community analysis and feedback
  + Benefits and outcomes.
* **Biologist, like all scientists, ask questions about the world and try to find answers through observations and experimentation. How do your daily observations help answers questions that you have about the world?**
* Like all Science, Biology is a process of inquiry. It is based on both \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
  + Scientific attitudes that help scientists and engineers ask new questions and define new problems:
* **Science and Society:**
  + Science interacts with
  + Science also has a big impact on
* **Science and Ethical Concerns:**
  + Ethics =
  + Group Discussion = Why and How do ethics play a role in science?
    - Is it okay to kill for a cure???
* **Avoiding Bias in Science:**
  + Bias = A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for or against something.
  + Bias comes from the French word \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ meaning “\_\_\_\_\_\_\_\_\_\_\_\_\_” or “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_”.
* **Important! Please read through Chapter 1 Lesson 2 thoroughly. It does contain some material that may be on the test that was not covered through lecture.**

**Chapter 1 Lesson 3: Patterns of Life**

* **Biology** =
  + Bio =
  + logy =
* An **organism** is defined as any individual \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ thing.
  + But how do we DEFINE living????
  + **Characteristics of Living things**:
    - # 1 = Made of one or more cells.
      * Cells =\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
        + Each cell contains the genetic material = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

DNA provides the info needed to control an organism’s life processes.

* + - #2 = Living things Need Energy.
      * All organisms need ­­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to carry out life processes.
      * What is Energy???
        + The ability to do \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_!
        + All of the “work” or processes that go on inside the body is known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Metabolism is all of the chemical processes that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ materials.

Example: Digestion is a process that breaks down food material inside of our bodies.

* + - # 3. =
      * Stimulus and Response.
        + Example: When a plant bends towards a window what is the stimulus and what is the response?

Stimulus =

Response =

Although conditions outside an organism may change dramatically, most organisms need to keep conditions inside their bodies as constant as possible. This process is called ­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Organisms must maintain homeostasis to survive in diverse environments.

Homeostasis =

Our bodies function best within a limited range of conditions. When conditions \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ …. Then life-threatening issues arise.

Examples =

An organism must be able to react, respond and adjust or else it will eventually…..\_\_\_\_\_\_\_\_\_\_\_\_ !!!! ☹

* + - * + # 4. =

Reproduction:

Reproduction is not essential for individual survival but what would happen if no organisms reproduced?

Two main types of reproduction:

Sexual Reproduction:

Asexual Reproduction:

Development:

As organisms grow they also develop. Development leads to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that can usually reproduce.