**Q4 Benchmark Study Guide**

**Unit 1: Classifying Living Organisms**

* What is the difference between an autotroph and a heterotroph?
* What is the difference between a eukaryote and a prokaryote?
* What are the levels of classification in order from most broad to most specific?
* Know how to use a Dichotomous key.
* List the details of the kingdoms: Animalia, Plantae, Fungi, Protista, Eubacteria, Archaebacteria

**Unit 2: Structure and Function of Cells**

* What is a cell?
* What is an organelle?
* What is the difference between a plant and animal cell?
* What is the function of the following cell parts:
  + Cytoplasm
  + Nucleus
  + Mitochondria
  + Cell membrane
  + Cell wall
* Know how these processes work (what is required and what is produced):
  + Photosynthesis
  + Cellular Respiration

**Unit 3: Organ Systems**

* Know the levels of organization in order from smallest to largest.
* Functions and organs of each system and how the systems work together:
  + Excretory
  + Digestive
  + Nervous
  + Reproductive (Egg, sperm, zygote)
  + Immune
  + Circulatory
  + Respiratory

**Unit 4: Genetics and Evolution**

* What is the difference between a dominant trait/allele and a recessive trait/allele?
* Know how to complete a Punnett Square.
* **Mitosis** is the process cells use to make new cells. The new daughter cells have the same number of chromosomes as the parent cells.
* Ethics: **Cloning** could lead to a reduction in genetic variation.
* **Genetic engineering**: Changing DNA to benefit a species.
* Types of Reproduction (definition and specific types)
  + What is required for sexual reproduction and what is the advantage?
  + Know the following types of asexual reproduction.
    - Budding
    - Binary Fission
* Fossils
  + What is the fossil record and how is it used?
  + Which fossils are the oldest in a sample of dirt layers?
* Evolution
  + What is natural selection?
  + What is competition?
  + What are variations?
  + What is overproduction?
  + What are adaptations?
  + What is the difference between mimicry and camouflage?

**Unit 5: Interdependence of Organisms**

* The sun is the ORIGINAL source of energy
* What is the difference between biotic and abiotic factors?
* **Scarcity**: an environmental change that creates a decrease in living space, food, water, etc.
* Biomes (Know the definition and organisms that live there):
* Tundra
* Taiga
* Desert
* Prairie/Temperate Grasslands
* Savanna/Tropical Grasslands
* Tropical Rainforest
* Temperate Deciduous Forest
* Freshwater (Rivers, streams, lakes, ponds, and wetlands)
* Marine (Estuary, intertidal zone, neritic zone, open ocean and benthic zone)
* What is the difference between a producer and a consumer?
* What is the relationship between a predator and a prey?
* What is the difference between the symbiotic relationships (mutualism, commensalism, and parasitism)?
* What is a carnivore, omnivore, herbivore, and decomposer?
* How does
* Know how to read the following diagrams:
  + Food Chain
  + Food Web