* ***Objective SC.912.N.1.1****:* ***Define a problem based on a specific body of knowledge and demonstrate the scientific method to investigate the problem. (Chapter 1)***

**Vocabulary**

Science:

Observation:

Independent Variable:

Dependent Variable:

* On a graph, where are the independent and dependent variables graphed?
* ***Objective SC.912.N.3.4****:* ***Recognize that theories do not become laws, nor do laws become theories; theories are well supported explanations and laws are well supported descriptions. (Chapter 1)***

**Vocabulary**

Scientific Theory:

Scientific Law:

* What is the difference between a theory and a law?
* ***Objective SC.912.L.18.1****:* ***Describe the basic molecular structures and primary functions of the four major categories of biological macromolecules. (Chapter 2.3)***

**Vocabulary**

Carbohydrates:

Monosaccharide:

Lipids:

Nucleic Acids:

Nucleotides:

Proteins:

Amino Acids:

* What organic compound provides the primary use of energy for living things?
* What is the main purpose of DNA?
* ***Objective SC.912.L.18.12****:* ***Discuss the special properties of water that contribute to Earth’s sustainability as an environment for life: cohesive behavior, ability to moderate temperature, expansion upon freezing, and versatility as a solvent. (Chapter 2.2)***

**Vocabulary**

Hydrogen Bond:

Cohesion:

Adhesion:

* How does heat capacity affect temperature?
* How does the polarity of water affect heat capacity?
* ***Objective SC.912.L.18.11****:* ***Explain the role of enzymes as catalysts that lower the activation energy of biochemical reactions. Identify factors, such as pH and temperature, and their effect on enzyme activity. (Chapter 2.4)***

**Vocabulary**

* Explain the role of enzymes and how they affect chemical reactions.
* How do factors, such as temperature and pH, affect enzyme activity?
* ***Objective SC.912.L.14.1****:* ***Describe the scientific theory of cells (cell theory) and relate the history of its discovery to the scientific process of science. (Chapter 7)***

**Vocabulary**

Cell:

Cell Theory:

* What technological development had to occur in order for cells to be discovered?
* ***Objective SC.912.L.14.3****:* ***Compare and Contrast the general structures of plant and animal cells. Compare and contrast the general structures of prokaryotic and eukaryotic cells. (Chapter 7)***

**Vocabulary**

Nucleus:

Prokaryote:

Eukaryote:

Chloroplasts:

Cell Wall:

* What organelles are found in both prokaryotic and eukaryotic cells?
* What are plant cell wells composed of?
* What are the 2 distinguishing structural differences between plant and animal cells?
* ***Objective SC.912.L.18.9****:* ***Explain the interrelated nature of photosynthesis and cellular respiration. (Chapters 8.2 and 9.1)***

**Vocabulary**

ATP:

Photosynthesis:

Chloroplast:

Cellular Respiration:

Mitochondria:

Aerobic:

Anaerobic:

* What are the reactants and products of cellular respiration?
* What are the reactants and products of photosynthesis?
* ***Objective SC.912.L.16.3****:* ***Describe the basic process of DNA replication and how it relates to the transmission and conservation of the genetic information. (Chapter 12)***

**Vocabulary**

Nucleotide:

Base Pairing:

Replication:

* What would be the complimentary DNA strand to the following: CGAAGT
* ***Objective SC.912.L.16.5*** ***Explain the basic processes of transcription and translation, and how they result in the expression of genes. (Chapter 13)***

**Vocabulary**

Protein synthesis:

Codon:

Anticodon:

Transcription:

Translation:

* ***Objective SC.912.L.16.9 Explain how and why the genetic code is universal and is common to almost all organisms.(13.2)***

**Vocabulary**

Genetic Code:

* What is meant by a “near universal genetic code”?
* ***Objective SC.912.L.15.15: Describe how mutation and genetic recombination increase genetic variation. (13.3)***

**Vocabulary**

Mutation:

* How do mutations in the DNA sequence result in phenotypic change, or no change, in an organism?
* ***Objective SC.912.L.16.17****: Compare and contrast mitosis and meiosis and relate to the processes of sexual and asexual reproduction and their consequences for genetic variation. (Chapters 10.1, 10.2, 10.3, and 11.4)*

**Vocabulary**

Cell Division:

Sexual Reproduction:

Asexual Reproduction:

Mitosis:

Meiosis:

Cancer:

* How many and what type of cells are produced by mitosis and meiosis?
* Why is sexual reproduction evolutionarily advantageous over asexual reproduction?
* What causes cancer?
* ***Objective SC.912.L.16.1****: Use Mendel’s laws of segregation and independent assortment to analyze patterns of inheritance. (Ch 11)*

**Vocabulary**

Alleles:

Homozygous:

Heterozygous:

Phenotype:

Genotype:

Dominant:

Recessive:

Incomplete Dominance:

Codominant:

* What is the difference between incomplete dominance and codominance?
* Blood type is codominant. If one parent has type B and another parent has type AB, what are the genotype and phenotype probabilities of their offspring?
* ***Objective SC.912.16.2: Discuss observed inheritance patterns caused by various modes of inheritance, including dominant, recessive, codominant, sex-linked, polygenic, and multiple alleles. (Chapter 14.1, 14.2)***

**Vocabulary**

Karyotype:

Pedigree:

Sex-linked:

Nondisjunction:

* Why do male children have a greater chance of inheriting a sex-linked trait than female children?
* ***Objective SC.912.L.16.10****:* ***Evaluate the impact of biotechnology on the individual, society, and the environment, including medical and ethical issues. (Chapter 15)***

**Vocabulary**

Recombinant DNA:

Gene Therapy:

* How is recombinant DNA used?
* What are three benefits of genetic engineering?
* ***Objective SC.912.L.15.8 Describe the scientific explanations of the origin of life on Earth. (19.3)***

**Vocabulary**

Miller and Urey Experiment:

Endosymbiotic Theory:

* Describe the atmosphere of early Earth.
* What essential element was not available in the atmosphere before the oceans formed?
* What 4 occurrences (in order) needed to occur for life to appear on Earth?
* What type of present day organism would have had the greatest difficulty surviving on Earth before the atmosphere formed?
* ***Objective SC.912.L.15.13****:* ***Describe the conditions required for natural selection, including: overproduction of offspring, inherited variation, and the struggle to survive, which result in differential reproductive success. (Ch. 16)***

**Vocabulary**

Natural Selection:

Adaptation:

* If the climate of an island changes drastically over time, what is a possible reason for some organisms thriving while others do not?
* How do organisms get traits that help them survive?
* ***Objective SC.912.L.15.1****:* ***Explain how the scientific theory of evolution is supported by the fossil record, comparative anatomy, comparative embryology, biogeography, molecular biology, and observed evolutionary change. (Chapters 16-17)***

**Vocabulary**

Evolution:

Fossils:

Directional Selection:

Stabilizing Selection:

Disruptive Selection:

* What is suggested by the evidence when fossils near the surface of the Earth resemble older fossils?
* What similarities are used in biochemical analysis?
* What do homologous structures between organisms suggest?
* ***Objective SC.912.L.15.6****:* ***Discuss distinguishing characteristics of the domains and kingdoms of living organisms. (Ch. 18)***

**Vocabulary**

Domain:

Bacteria:

Archaea:

Eukarya:

* What are two distinguishing characteristics about each of the following kingdoms: protista, fungi, plantae, and animalia?
* What does a cladogram show about relationships between organisms?
* ***Objective SC.912.L.15.10 Identify basic trends in hominid evolution from early ancestors 6 million years ago to modern humans including brain size, jaw size, language and manufacture of tools. (26.3)***

**Vocabulary**

Hominid:

Opposable thumb:

* What is the difference between the multiregional model and the out of Africa model for the distribution of members of the genus Homo?
* ***Objective SC.912.L.14.7****:* ***Relate the structure of each of the major plant organs and tissues to physiological processes. (Chs 22-23)***

**Vocabulary**

Xylem:

Phloem:

Leaf:

Cone:

* What is the major function of the following organs: root, stem, leaf, flower, fruit, and cone?
* ***Objective SC.912.L.17.9****:* ***Use a food web to identify and distinguish producers, consumers, and decomposers. Explain the pathway of energy transfer through trophic levels and the reduction of available energy at successive trophic levels. (Chapter 3)***

**Vocabulary**

Biosphere:

Ecology:

Biotic Factor:

Abiotic Factor:

Producer:

Consumer:

Food Web:

Food Chain:

* When an organism is removed from the beginning of a food chain, what effect does this have on the higher level consumers?
* How does the amount of energy available change as you move up a food pyramid?
* How is energy transfer shown in a food web?
* How is energy lost from one consumer to the next?
* What types of organisms are in the first trophic level?
* ***Objective SC.912.E.7.1 Analyze the movement of matter & energy through the different biogeochemical cycles of water & carbon. (3.4)***

**Vocabulary**

Water Cycle:

Carbon Cycle:

* How does carbon recycle through the biosphere?
* ***Objective SC.912.L.17.4 Describe changes in ecosystems resulting from seasonal variations, climate change, and succession. (Ch 4)***

**Vocabulary**

Primary Succession:

Secondary Succession:

Pioneer Species:

Climax Community:

* Explain the difference between primary and secondary succession.
* ***Objective SC.912.L.17.5****:* ***Analyze how population size is determined by births, deaths, immigration, emigration, and limiting factors (biotic and abiotic) that determine carrying capacity. (Chapter 5)***

**Vocabulary**

Population Density:

Exponential Growth:

Logistic Growth:

Carrying Capacity:

* What are density-dependent limiting factors?
* How do immigration, emigration, birth rate, and death rate effect population growth rate?
* What are examples of biotic and abiotic factors that affect population size?
* ***Objective SC.912.L.17.8****:* ***Recognize the consequences of the losses of biodiversity due to catastrophic events, climate changes, human activity, and the introduction of invasive, non-native species. (Chapter 6)***

**Vocabulary**

Biodiversity:

Invasive Species:

Habitat:

* + How do invasive species impact an ecosystem?
* ***Objective SC.912.L.17.20****:* ***Predict the impact of individuals on environmental systems and examine how human lifestyles affect sustainability. (Chapter 6)***

**Vocabulary**

Pollutant:

Biological Magnification:

Sustainable Development:

* What is the difference between renewable resources and nonrenewable resources? Provide an example of each.
* ***Objective SC.912.L.16.13****:* ***Describe the basic anatomy and physiology of the human reproductive system. Describe the process of human development from fertilization to birth and major changes that occur in each trimester of pregnancy. (34.3 and 34.4)***

**Vocabulary**

Puberty:

Zygote:

Fetus:

* Where are gametes produced in the male and female human reproductive system? What are they in males and females?
* ***Objective SC.912.L.14.26: Identify the major parts of the brain on diagrams or models***. ***(31.2)***
* ***Objective SC.912.L.14.36: Describe the factors affecting blood flow through the cardiovascular system. (33.1)***

**Vocabulary**

Arteries:

Veins:

* + What factors affect blood flow?
  + Describe two serious health problems regarding blood flow.
* ***Objective SC.912.L.14.52: Explain the basic functions of the human immune system, including specific and nonspecific immune response, vaccines, and antibiotics. (Ch 35)***

**Describe the Body’s Lines of Defense against disease:**

* **First Line of Defense:**
* **Second Line of Defense:**
* **Third Line of Defense:**