

Texas Tutorials are designed specifically for the Texas Essential Knowledge and Skills (TEKS) to prepare students for the State of Texas Assessment of Academic Readiness (STAAR)® end-of-course assessments.

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Biology Tutorials offer targeted instruction, practice, and review designed to help students develop fluency, deepen conceptual understanding, and apply scientific thinking skills. Students engage with the content in an interactive, feedback-rich environment as they progress through standards-aligned modules. By constantly honing their ability to explain and analyze biological scenarios, students build the depth of knowledge and higher-order skills required to demonstrate their mastery when put to the test.

In each module, the Learn It and Try It make complex ideas accessible through focused content, guided analysis, multi-modal representations, and personalized feedback as students reason through increasingly challenging problems. The Review It offers a high-impact summary of key concepts and relates those concepts to students' lives. The Test It assesses students' mastery of the module's concepts, providing granular performance data to students and teachers after each attempt. To help students focus on the content most relevant to them, unit-level pretests and posttests can quickly identify where students are strong and where they're still learning.

## Unit 1: Nature of Life

### • FROM ATOMS TO BIOSPHERE

- 10.C: The student knows that biological systems are composed of multiple levels. analyze the levels of organization in biological systems and relate the levels to each other and to the whole system.

### • CHARACTERISTICS OF LIFE

- 4.A: The student knows that cells are the basic structures of all living things with specialized parts that perform specific functions and that viruses are different from cells. compare and contrast prokaryotic and eukaryotic cells;
- 7.G: The student knows evolutionary theory is a scientific explanation for the unity and diversity of life. analyze and evaluate scientific explanations concerning the complexity of the cell.
- 4.B: The student knows that cells are the basic structures of all living things with specialized parts that perform specific functions and that viruses are different from cells. investigate and explain cellular processes, including homeostasis, energy conversions, transport of molecules, and synthesis of new molecules; and

- 5.C: The student knows how an organism grows and the importance of cell differentiation. describe the roles of DNA, ribonucleic acid (RNA), and environmental factors in cell differentiation; and
- 6.A: The student knows the mechanisms of genetics, including the role of nucleic acids and the principles of Mendelian Genetics. identify components of DNA, and describe how information for specifying the traits of an organism is carried in the DNA;
- 11.A: The student knows that biological systems work to achieve and maintain balance. describe the role of internal feedback mechanisms in the maintenance of homeostasis;
- 4.C: The student knows that cells are the basic structures of all living things with specialized parts that perform specific functions and that viruses are different from cells. compare the structures of viruses to cells, describe viral reproduction, and describe the role of viruses in causing diseases such as human immunodeficiency virus (HIV) and influenza.
- 5.A: The student knows how an organism grows and the importance of cell differentiation. describe the stages of the cell cycle, including deoxyribonucleic acid (DNA) replication and mitosis, and the importance of the cell cycle to the growth of organisms;
- 12.B: The student knows that interdependence and interactions occur within an environmental system. compare variations and adaptations of organisms in different ecosystems;

## Unit 2: Chemistry of Life

### • BIOMOLECULES

- 9.A: The student knows the significance of various molecules involved in metabolic processes and energy conversions that occur in living organisms. compare the structures and functions of different types of biomolecules, including carbohydrates, lipids, proteins, and nucleic acids;
- 9.D: The student knows the significance of various molecules involved in metabolic processes and energy conversions that occur in living organisms. analyze and evaluate the evidence regarding formation of simple organic molecules and their organization into long complex molecules having information such as the DNA molecule for self-replicating life.

### • ENZYMES

- 9.C: The student knows the significance of various molecules involved in metabolic processes and energy conversions that occur in living organisms. identify and investigate the role of enzymes; and

## Unit 3: Cell Structure and Function

### • PROKARYOTIC AND EUKARYOTIC CELLS

- 3.F: The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. research and describe the history of biology and contributions of scientists.
- 4.B: The student knows that cells are the basic structures of all living things with specialized parts that perform specific functions and that viruses are different from cells. investigate and

explain cellular processes, including homeostasis, energy conversions, transport of molecules, and synthesis of new molecules; and

- 4.A: The student knows that cells are the basic structures of all living things with specialized parts that perform specific functions and that viruses are different from cells. compare and contrast prokaryotic and eukaryotic cells;

- **PLANT AND ANIMAL CELLS**

- 4.B: The student knows that cells are the basic structures of all living things with specialized parts that perform specific functions and that viruses are different from cells. investigate and explain cellular processes, including homeostasis, energy conversions, transport of molecules, and synthesis of new molecules; and

- **PASSIVE TRANSPORT**

- 4.B: The student knows that cells are the basic structures of all living things with specialized parts that perform specific functions and that viruses are different from cells. investigate and explain cellular processes, including homeostasis, energy conversions, transport of molecules, and synthesis of new molecules; and
- 11.A: The student knows that biological systems work to achieve and maintain balance. describe the role of internal feedback mechanisms in the maintenance of homeostasis;

- **ACTIVE TRANSPORT**

- 4.B: The student knows that cells are the basic structures of all living things with specialized parts that perform specific functions and that viruses are different from cells. investigate and explain cellular processes, including homeostasis, energy conversions, transport of molecules, and synthesis of new molecules; and
- 11.A: The student knows that biological systems work to achieve and maintain balance. describe the role of internal feedback mechanisms in the maintenance of homeostasis;

#### Unit 4: Cellular Energetics

- **PHOTOSYNTHESIS**

- 4.B: The student knows that cells are the basic structures of all living things with specialized parts that perform specific functions and that viruses are different from cells. investigate and explain cellular processes, including homeostasis, energy conversions, transport of molecules, and synthesis of new molecules; and
- 9.B: The student knows the significance of various molecules involved in metabolic processes and energy conversions that occur in living organisms. compare the reactants and products of photosynthesis and cellular respiration in terms of energy and matter;

- **CELLULAR RESPIRATION**

- 4.B: The student knows that cells are the basic structures of all living things with specialized parts that perform specific functions and that viruses are different from cells. investigate and explain cellular processes, including homeostasis, energy conversions, transport of molecules, and synthesis of new molecules; and

- 9.B: The student knows the significance of various molecules involved in metabolic processes and energy conversions that occur in living organisms. compare the reactants and products of photosynthesis and cellular respiration in terms of energy and matter;

## Unit 5: Cell Growth and Reproduction

### • THE CELL CYCLE

- 4.B: The student knows that cells are the basic structures of all living things with specialized parts that perform specific functions and that viruses are different from cells. investigate and explain cellular processes, including homeostasis, energy conversions, transport of molecules, and synthesis of new molecules; and
- 5.A: The student knows how an organism grows and the importance of cell differentiation. describe the stages of the cell cycle, including deoxyribonucleic acid (DNA) replication and mitosis, and the importance of the cell cycle to the growth of organisms;
- 5.C: The student knows how an organism grows and the importance of cell differentiation. describe the roles of DNA, ribonucleic acid (RNA), and environmental factors in cell differentiation; and
- 5.D: The student knows how an organism grows and the importance of cell differentiation. recognize that disruptions of the cell cycle lead to diseases such as cancer.

### • MITOSIS

- 5.A: The student knows how an organism grows and the importance of cell differentiation. describe the stages of the cell cycle, including deoxyribonucleic acid (DNA) replication and mitosis, and the importance of the cell cycle to the growth of organisms;

## Unit 6: DNA Structure and Function

### • COMPONENTS OF DNA

- 6.B: The student knows the mechanisms of genetics, including the role of nucleic acids and the principles of Mendelian Genetics. recognize that components that make up the genetic code are common to all organisms;
- 9.A: The student knows the significance of various molecules involved in metabolic processes and energy conversions that occur in living organisms. compare the structures and functions of different types of biomolecules, including carbohydrates, lipids, proteins, and nucleic acids;
- 6.A: The student knows the mechanisms of genetics, including the role of nucleic acids and the principles of Mendelian Genetics. identify components of DNA, and describe how information for specifying the traits of an organism is carried in the DNA;
- 5.C: The student knows how an organism grows and the importance of cell differentiation. describe the roles of DNA, ribonucleic acid (RNA), and environmental factors in cell differentiation; and
- 3.F: The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. research and describe the history of biology and contributions of scientists.

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- **THE GENETIC CODE**

- 5.C: The student knows how an organism grows and the importance of cell differentiation. describe the roles of DNA, ribonucleic acid (RNA), and environmental factors in cell differentiation; and
- 6.A: The student knows the mechanisms of genetics, including the role of nucleic acids and the principles of Mendelian Genetics. identify components of DNA, and describe how information for specifying the traits of an organism is carried in the DNA;
- 6.B: The student knows the mechanisms of genetics, including the role of nucleic acids and the principles of Mendelian Genetics. recognize that components that make up the genetic code are common to all organisms;
- 9.A: The student knows the significance of various molecules involved in metabolic processes and energy conversions that occur in living organisms. compare the structures and functions of different types of biomolecules, including carbohydrates, lipids, proteins, and nucleic acids;
- 3.F: The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. research and describe the history of biology and contributions of scientists.
- 4.B: The student knows that cells are the basic structures of all living things with specialized parts that perform specific functions and that viruses are different from cells. investigate and explain cellular processes, including homeostasis, energy conversions, transport of molecules, and synthesis of new molecules; and
- 6.D: The student knows the mechanisms of genetics, including the role of nucleic acids and the principles of Mendelian Genetics. recognize that gene expression is a regulated process;

- **DNA REPLICATION**

- 5.A: The student knows how an organism grows and the importance of cell differentiation. describe the stages of the cell cycle, including deoxyribonucleic acid (DNA) replication and mitosis, and the importance of the cell cycle to the growth of organisms;
- 6.C: The student knows the mechanisms of genetics, including the role of nucleic acids and the principles of Mendelian Genetics. explain the purpose and process of transcription and translation using models of DNA and RNA;
- 6.A: The student knows the mechanisms of genetics, including the role of nucleic acids and the principles of Mendelian Genetics. identify components of DNA, and describe how information for specifying the traits of an organism is carried in the DNA;

## Unit 7: Gene Expression

- **TRANSCRIPTION**

- 6.A: The student knows the mechanisms of genetics, including the role of nucleic acids and the principles of Mendelian Genetics. identify components of DNA, and describe how information for specifying the traits of an organism is carried in the DNA;

- 6.C: The student knows the mechanisms of genetics, including the role of nucleic acids and the principles of Mendelian Genetics. explain the purpose and process of transcription and translation using models of DNA and RNA;
- 9.A: The student knows the significance of various molecules involved in metabolic processes and energy conversions that occur in living organisms. compare the structures and functions of different types of biomolecules, including carbohydrates, lipids, proteins, and nucleic acids;
- 4.B: The student knows that cells are the basic structures of all living things with specialized parts that perform specific functions and that viruses are different from cells. investigate and explain cellular processes, including homeostasis, energy conversions, transport of molecules, and synthesis of new molecules; and
- 5.C: The student knows how an organism grows and the importance of cell differentiation. describe the roles of DNA, ribonucleic acid (RNA), and environmental factors in cell differentiation; and
- **TRANSLATION**
  - 4.B: The student knows that cells are the basic structures of all living things with specialized parts that perform specific functions and that viruses are different from cells. investigate and explain cellular processes, including homeostasis, energy conversions, transport of molecules, and synthesis of new molecules; and
  - 5.C: The student knows how an organism grows and the importance of cell differentiation. describe the roles of DNA, ribonucleic acid (RNA), and environmental factors in cell differentiation; and
  - 6.C: The student knows the mechanisms of genetics, including the role of nucleic acids and the principles of Mendelian Genetics. explain the purpose and process of transcription and translation using models of DNA and RNA;
  - 9.A: The student knows the significance of various molecules involved in metabolic processes and energy conversions that occur in living organisms. compare the structures and functions of different types of biomolecules, including carbohydrates, lipids, proteins, and nucleic acids;
  - 9.C: The student knows the significance of various molecules involved in metabolic processes and energy conversions that occur in living organisms. identify and investigate the role of enzymes; and

## Unit 8: Mutations

- **GENETIC CHANGES IN DNA**

- 6.E: The student knows the mechanisms of genetics, including the role of nucleic acids and the principles of Mendelian Genetics. identify and illustrate changes in DNA and evaluate the significance of these changes;
- 7.F: The student knows evolutionary theory is a scientific explanation for the unity and diversity of life. analyze and evaluate the effects of other evolutionary mechanisms, including genetic drift, gene flow, mutation, and recombination; and

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- **GENETIC CHANGES IN CHROMOSOMES**

- 6.E: The student knows the mechanisms of genetics, including the role of nucleic acids and the principles of Mendelian Genetics. identify and illustrate changes in DNA and evaluate the significance of these changes;
- 6.H: The student knows the mechanisms of genetics, including the role of nucleic acids and the principles of Mendelian Genetics. describe how techniques such as DNA fingerprinting, genetic modifications, and chromosomal analysis are used to study the genomes of organisms.
- 6.G: The student knows the mechanisms of genetics, including the role of nucleic acids and the principles of Mendelian Genetics. recognize the significance of meiosis to sexual reproduction; and
- 7.F: The student knows evolutionary theory is a scientific explanation for the unity and diversity of life. analyze and evaluate the effects of other evolutionary mechanisms, including genetic drift, gene flow, mutation, and recombination; and

### Unit 9: Heredity

- **MENDELIAN LAWS OF HEREDITY**

- 3.F: The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. research and describe the history of biology and contributions of scientists.
- 6.F: The student knows the mechanisms of genetics, including the role of nucleic acids and the principles of Mendelian Genetics. predict possible outcomes of various genetic combinations such as monohybrid crosses, dihybrid crosses and non-Mendelian inheritance;

- **MULTIPLE ALLELES AND ALLELES WITHOUT DOMINANCE**

- 6.F: The student knows the mechanisms of genetics, including the role of nucleic acids and the principles of Mendelian Genetics. predict possible outcomes of various genetic combinations such as monohybrid crosses, dihybrid crosses and non-Mendelian inheritance;

### Unit 10: Reproduction

- **SEXUAL AND ASEQUAL REPRODUCTION**

- 6.G: The student knows the mechanisms of genetics, including the role of nucleic acids and the principles of Mendelian Genetics. recognize the significance of meiosis to sexual reproduction; and
- 5.A: The student knows how an organism grows and the importance of cell differentiation. describe the stages of the cell cycle, including deoxyribonucleic acid (DNA) replication and mitosis, and the importance of the cell cycle to the growth of organisms;

- **MEIOSIS**

- 6.G: The student knows the mechanisms of genetics, including the role of nucleic acids and the principles of Mendelian Genetics. recognize the significance of meiosis to sexual reproduction; and



- 7.F: The student knows evolutionary theory is a scientific explanation for the unity and diversity of life. analyze and evaluate the effects of other evolutionary mechanisms, including genetic drift, gene flow, mutation, and recombination; and

## Unit 11: Evolution

### • MULTIPLE LINES OF EVIDENCE

- 7.A: The student knows evolutionary theory is a scientific explanation for the unity and diversity of life. analyze and evaluate how evidence of common ancestry among groups is provided by the fossil record, biogeography, and homologies, including anatomical, molecular, and developmental;
- 7.B: The student knows evolutionary theory is a scientific explanation for the unity and diversity of life. analyze and evaluate scientific explanations concerning any data of sudden appearance, stasis, and sequential nature of groups in the fossil record;
- 6.B: The student knows the mechanisms of genetics, including the role of nucleic acids and the principles of Mendelian Genetics. recognize that components that make up the genetic code are common to all organisms;

### • THE FOSSIL RECORD

- 7.A: The student knows evolutionary theory is a scientific explanation for the unity and diversity of life. analyze and evaluate how evidence of common ancestry among groups is provided by the fossil record, biogeography, and homologies, including anatomical, molecular, and developmental;
- 7.B: The student knows evolutionary theory is a scientific explanation for the unity and diversity of life. analyze and evaluate scientific explanations concerning any data of sudden appearance, stasis, and sequential nature of groups in the fossil record;

## Unit 12: Mechanisms of Evolution

### • NATURAL SELECTION

- 7.D: The student knows evolutionary theory is a scientific explanation for the unity and diversity of life. analyze and evaluate how the elements of natural selection, including inherited variation, the potential of a population to produce more offspring than can survive, and a finite supply of environmental resources, result in differential reproductive success;
- 7.E: The student knows evolutionary theory is a scientific explanation for the unity and diversity of life. analyze and evaluate the relationship of natural selection to adaptation and to the development of diversity in and among species;
- 12.B: The student knows that interdependence and interactions occur within an environmental system. compare variations and adaptations of organisms in different ecosystems;
- 7.C: The student knows evolutionary theory is a scientific explanation for the unity and diversity of life. analyze and evaluate how natural selection produces change in populations, not individuals;

### • EVOLUTION OF SPECIES



- 7.E: The student knows evolutionary theory is a scientific explanation for the unity and diversity of life. analyze and evaluate the relationship of natural selection to adaptation and to the development of diversity in and among species;
- 7.F: The student knows evolutionary theory is a scientific explanation for the unity and diversity of life. analyze and evaluate the effects of other evolutionary mechanisms, including genetic drift, gene flow, mutation, and recombination; and
- 7.A: The student knows evolutionary theory is a scientific explanation for the unity and diversity of life. analyze and evaluate how evidence of common ancestry among groups is provided by the fossil record, biogeography, and homologies, including anatomical, molecular, and developmental;
- 7.D: The student knows evolutionary theory is a scientific explanation for the unity and diversity of life. analyze and evaluate how the elements of natural selection, including inherited variation, the potential of a population to produce more offspring than can survive, and a finite supply of environmental resources, result in differential reproductive success;

### Unit 13: Classification

#### • TAXONOMY

- 8.A: The student knows that taxonomy is a branching classification based on the shared characteristics of organisms and can change as new discoveries are made. define taxonomy and recognize the importance of a standardized taxonomic system to the scientific community;
- 8.B: The student knows that taxonomy is a branching classification based on the shared characteristics of organisms and can change as new discoveries are made. categorize organisms using a hierarchical classification system based on similarities and differences shared among groups; and
- 8.C: The student knows that taxonomy is a branching classification based on the shared characteristics of organisms and can change as new discoveries are made. compare characteristics of taxonomic groups, including archaea, bacteria, protists, fungi, plants, and animals.

#### • THE SIX KINGDOMS

- 8.A: The student knows that taxonomy is a branching classification based on the shared characteristics of organisms and can change as new discoveries are made. define taxonomy and recognize the importance of a standardized taxonomic system to the scientific community;
- 8.B: The student knows that taxonomy is a branching classification based on the shared characteristics of organisms and can change as new discoveries are made. categorize organisms using a hierarchical classification system based on similarities and differences shared among groups; and
- 8.C: The student knows that taxonomy is a branching classification based on the shared characteristics of organisms and can change as new discoveries are made. compare

characteristics of taxonomic groups, including archaea, bacteria, protists, fungi, plants, and animals.

## Unit 14: Homeostasis

### • HOMEOSTASIS AND DYNAMIC EQUILIBRIUM

- 4.B: The student knows that cells are the basic structures of all living things with specialized parts that perform specific functions and that viruses are different from cells. investigate and explain cellular processes, including homeostasis, energy conversions, transport of molecules, and synthesis of new molecules; and
- 11.B: The student knows that biological systems work to achieve and maintain balance. investigate and analyze how organisms, populations, and communities respond to external factors;
- 11.A: The student knows that biological systems work to achieve and maintain balance. describe the role of internal feedback mechanisms in the maintenance of homeostasis;
- 12.F: The student knows that interdependence and interactions occur within an environmental system. describe how environmental change can impact ecosystem stability.
- 10.A: The student knows that biological systems are composed of multiple levels. describe the interactions that occur among systems that perform the functions of regulation, nutrient absorption, reproduction, and defense from injury or illness in animals;
- 10.B: The student knows that biological systems are composed of multiple levels. describe the interactions that occur among systems that perform the functions of transport, reproduction, and response in plants; and
- 10.C: The student knows that biological systems are composed of multiple levels. analyze the levels of organization in biological systems and relate the levels to each other and to the whole system.

### • FEEDBACK MECHANISMS IN ANIMALS

- 4.B: The student knows that cells are the basic structures of all living things with specialized parts that perform specific functions and that viruses are different from cells. investigate and explain cellular processes, including homeostasis, energy conversions, transport of molecules, and synthesis of new molecules; and
- 10.A: The student knows that biological systems are composed of multiple levels. describe the interactions that occur among systems that perform the functions of regulation, nutrient absorption, reproduction, and defense from injury or illness in animals;
- 11.A: The student knows that biological systems work to achieve and maintain balance. describe the role of internal feedback mechanisms in the maintenance of homeostasis;
- 10.C: The student knows that biological systems are composed of multiple levels. analyze the levels of organization in biological systems and relate the levels to each other and to the whole system.

## Unit 15: Functions of Animal Systems

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- **THE IMMUNE AND LYMPHATIC SYSTEMS**

- 10.A: The student knows that biological systems are composed of multiple levels. describe the interactions that occur among systems that perform the functions of regulation, nutrient absorption, reproduction, and defense from injury or illness in animals;
- 4.B: The student knows that cells are the basic structures of all living things with specialized parts that perform specific functions and that viruses are different from cells. investigate and explain cellular processes, including homeostasis, energy conversions, transport of molecules, and synthesis of new molecules; and
- 5.B: The student knows how an organism grows and the importance of cell differentiation. examine specialized cells, including roots, stems, and leaves of plants; and animal cells such as blood, muscle, and epithelium;

- **THE NERVOUS SYSTEM**

- 5.B: The student knows how an organism grows and the importance of cell differentiation. examine specialized cells, including roots, stems, and leaves of plants; and animal cells such as blood, muscle, and epithelium;
- 10.A: The student knows that biological systems are composed of multiple levels. describe the interactions that occur among systems that perform the functions of regulation, nutrient absorption, reproduction, and defense from injury or illness in animals;

### Unit 16: Functions of Plant Systems

- **PLANT TISSUES**

- 5.B: The student knows how an organism grows and the importance of cell differentiation. examine specialized cells, including roots, stems, and leaves of plants; and animal cells such as blood, muscle, and epithelium;
- 10.B: The student knows that biological systems are composed of multiple levels. describe the interactions that occur among systems that perform the functions of transport, reproduction, and response in plants; and
- 12.B: The student knows that interdependence and interactions occur within an environmental system. compare variations and adaptations of organisms in different ecosystems;

- **PLANT RESPONSES**

- 10.B: The student knows that biological systems are composed of multiple levels. describe the interactions that occur among systems that perform the functions of transport, reproduction, and response in plants; and
- 11.B: The student knows that biological systems work to achieve and maintain balance. investigate and analyze how organisms, populations, and communities respond to external factors;

### Unit 17: Cycles in Nature

- **THE CARBON CYCLE**

- 9.B: The student knows the significance of various molecules involved in metabolic processes and energy conversions that occur in living organisms. compare the reactants and products of photosynthesis and cellular respiration in terms of energy and matter;
- 12.E: The student knows that interdependence and interactions occur within an environmental system. describe the flow of matter through the carbon and nitrogen cycles and explain the consequences of disrupting these cycles; and
- 12.F: The student knows that interdependence and interactions occur within an environmental system. describe how environmental change can impact ecosystem stability.
- 3.D: The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. evaluate the impact of scientific research on society and the environment;
- **THE NITROGEN AND PHOSPHORUS CYCLES**
  - 11.C: The student knows that biological systems work to achieve and maintain balance. summarize the role of microorganisms in both maintaining and disrupting the health of both organisms and ecosystems; and
  - 12.E: The student knows that interdependence and interactions occur within an environmental system. describe the flow of matter through the carbon and nitrogen cycles and explain the consequences of disrupting these cycles; and

## Unit 18: Matter and Energy

- **FOOD CHAINS AND WEBS**
  - 11.C: The student knows that biological systems work to achieve and maintain balance. summarize the role of microorganisms in both maintaining and disrupting the health of both organisms and ecosystems; and
  - 12.A: The student knows that interdependence and interactions occur within an environmental system. interpret relationships, including predation, parasitism, commensalism, mutualism, and competition among organisms;
  - 12.C: The student knows that interdependence and interactions occur within an environmental system. analyze the flow of matter and energy through trophic levels using various models, including food chains, food webs, and ecological pyramids;
  - 12.D: The student knows that interdependence and interactions occur within an environmental system. recognize that long-term survival of species is dependent on changing resource bases that are limited;
  - 12.F: The student knows that interdependence and interactions occur within an environmental system. describe how environmental change can impact ecosystem stability.
- **PYRAMIDS OF ENERGY, NUMBERS, AND BIOMASS**
  - 12.C: The student knows that interdependence and interactions occur within an environmental system. analyze the flow of matter and energy through trophic levels using various models, including food chains, food webs, and ecological pyramids;

- 12.D: The student knows that interdependence and interactions occur within an environmental system. recognize that long-term survival of species is dependent on changing resource bases that are limited;

### **Unit 19: Ecology of Succession**

- **SUCCESSION IN COMMUNITIES**

- 11.D: The student knows that biological systems work to achieve and maintain balance. describe how events and processes that occur during ecological succession can change populations and species diversity.

- **NATURAL IMPACTS ON ECOSYSTEMS**

- 12.F: The student knows that interdependence and interactions occur within an environmental system. describe how environmental change can impact ecosystem stability.
- 11.B: The student knows that biological systems work to achieve and maintain balance. investigate and analyze how organisms, populations, and communities respond to external factors;
- 11.D: The student knows that biological systems work to achieve and maintain balance. describe how events and processes that occur during ecological succession can change populations and species diversity.