

Inherited Traits	K.13.D identify ways that young plants resemble the parent plant.	1.13.C compare ways that young animals resemble their parents.			4.13.B differentiate between inherited and acquired physical traits of organisms.				8.13.B describe the function of genes within chromosomes in determining inherited traits of offspring;	Bio.7.A identify components of DNA, explain how the nucleotide sequence specifies some traits of an organism, and examine scientific explanations for the origin of DNA; Bio. 8.B predict possible outcomes of various genetic combinations using monohybrid and dihybrid crosses, including non-Mendelian traits of incomplete dominance, codominance, sex-linked traits, and multiple alleles.										
Genetic Diversity								7.13.C compare the results of asexual and sexual reproduction of plants and animals in relation to the diversity of offspring and the changes in the population over time;		Bio.8.A analyze the significance of chromosome reduction, independent assortment, and crossing-over during meiosis in increasing diversity in populations of organisms that reproduce sexually;							Env.5.G predict changes that may occur in an ecosystem if genetic diversity is increased or decreased.			
Biotic and Abiotic		1.12.A classify living and nonliving things based upon whether they have basic needs and produce young; 1.12.B describe and record examples of interactions and dependence between living and nonliving components in terrariums or aquariums;	2.12.A describe how the physical characteristics of environments, including the amount of rainfall, support plants and animals within an ecosystem;	3.12.A explain how temperature and precipitation affect animal growth and behavior through migration and hibernation and plant responses through dormancy;		5.12.A observe and describe how a variety of organisms survive by interacting with biotic and abiotic factors in a healthy ecosystem;	6.12.A investigate how organisms and populations in an ecosystem depend on and may compete for biotic factors such as food and abiotic factors such as availability of light and water, range of temperatures, or soil composition;											Env.5.C evaluate the effects of fluctuations in abiotic factors on local ecosystems and local biomes; Env.5.D measure the concentration of dissolved substances such as dissolved oxygen, chlorides, and nitrates and describe their impacts on an ecosystem;	Aqua.9.C explain how tidal cycles influence intertidal ecology.	
																		Env.8.D analyze and make predictions about the impact on populations of geographic locales due to diseases, birth and death rates, urbanization, and natural events such as migration and seasonal changes. Env.9.B explain how regional changes in the environment may have global effects;	Aqua.7.E identify the interdependence of organisms in an aquatic environment such as in a pond, a river, a lake, an ocean, or an aquifer and the biosphere. Aqua.8.A evaluate data over a period of time from an established aquatic environment documenting seasonal changes and the behavior of organisms; Aqua.6.A identify key features and characteristics of atmospheric, geological, hydrological, and biological systems as they relate to aquatic environments;	

Interdependence																			<p>Aqua.6.B describe the interrelatedness of atmospheric, geological, hydrological, and biological systems in aquatic ecosystems, including positive and negative feedback loops;</p> <p>Aqua.7.D evaluate factors affecting aquatic population cycles such as lunar cycles, temperature variations, hours of daylight, and predator-prey relationships;</p> <p>Aqua.11.B identify interrelationships between ocean currents, climates, and geologic features such as continental margins, active and passive margins, abyssal plains, island atolls, peninsulas, barrier islands, and hydrothermal vents;</p> <p>Aqua.7.B identify biological, chemical, geological, and physical components of an aquatic life zone as they relate to the organisms in it;</p> <p>Aqua.6.C evaluate environmental data using technology such as maps, visualizations, satellite data, Global Positioning System (GPS), Geographic Information System (GIS), weather balloons, and buoys to model the interactions that affect aquatic ecosystems.</p>	
Flow of Energy		1.12.C identify and illustrate how living organisms depend on each other through food chains.	2.12.B create and describe food chains identifying producers and consumers to demonstrate how animals depend on other living things;	3.12.B identify and describe the flow of energy in a food chain and predict how changes in a food chain such as removal of frogs from a pond or bees from a field affect the ecosystem;	4.12.B describe the cycling of matter and flow of energy through food webs, including the roles of the Sun, producers, consumers, and decomposers;	5.12.B predict how changes in the ecosystem affect the cycling of matter and flow of energy in a food web;	6.12.B describe and give examples of predatory, competitive, and symbiotic relationships between organisms, including mutualism, parasitism, and commensalism;	7.12.B describe how ecosystems are sustained by the continuous flow of energy and the recycling of matter and nutrients within the biosphere.	8.12.A explain how disruptions such as population changes, natural disasters, and human intervention impact the transfer of energy in food webs in ecosystems;	Bio.13.B analyze how ecosystem stability is affected by disruptions to the cycling of matter and flow of energy through trophic levels using models;							Env.5.E use models to predict how the introduction of an invasive species may alter the food chain and affect existing populations in an ecosystem;	Aqua.7.A identify how energy flows and matter cycles through both freshwater and marine aquatic systems, including food webs, chains, and pyramids;	Aqua.8.C use data from short-term or long-term studies to analyze interrelationships between producers, consumers, and decomposers in aquatic ecosystems.	
Behavior			2.13.B record and compare how the structures and behaviors of animals help them find and take in food, water, and air;			5.13.B explain how instinctual behavioral traits such as turtle hatchlings returning to the sea and learned behavioral traits such as orcas hunting in packs increase chances of	6.12.B describe and give examples of predatory, competitive, and symbiotic relationships between organisms, including mutualism, parasitism, and commensalism;										Env.5.A identify native plants and animals within a local ecosystem and compare their roles to those of plants and animals in other biomes, including aquatic, grassland, forest, desert, and tundra;			

Human Impact on Ecosystems					5.12.C describe a healthy ecosystem and how human activities can be beneficial or harmful to an ecosystem.				Bio.13.D explain how environmental change, including change due to human activity, affects biodiversity and analyze how changes in biodiversity impact ecosystem stability.						Env.11.A evaluate the negative effects of human activities on the environment, including overhunting, overfishing, ecotourism, all-terrain vehicles, and personal watercraft;	Aqua.14.C investigate the role of humans in unbalanced systems involving phenomena such as invasive species, fish farming, cultural eutrophication, or red tides;		
							6.12.C describe the hierarchical organization of organism, population, and community within an ecosystem.	7.13.B describe the hierarchical organization of cells, tissues, organs, and organ systems within plants and animals;						Env. 11.B evaluate the positive effects of human activities on the environment, including habitat restoration projects, species preservation efforts, nature conservancy groups, game and wildlife management, and ecotourism;	Aqua.14.A analyze the cumulative impact of human population growth on an aquatic ecosystem;			
Hierarchical Organization							6.12.C describe the hierarchical organization of organism, population, and community within an ecosystem.	7.13.B describe the hierarchical organization of cells, tissues, organs, and organ systems within plants and animals;						Env.12.E argue from evidence whether or not a healthy economy and a healthy environment are mutually exclusive.	Aqua.14.D investigate the role of humans in unbalanced systems involving phenomena such as invasive species, fish farming, cultural eutrophication, or red tides;			
							6.13.A describe the historical development of cell theory and explain how organisms are composed of one or more cells, which come from pre-existing cells and are the basic unit of structure and function;		8.13.A identify the function of the cell membrane, cell wall, nucleus, ribosomes, cytoplasm, mitochondria, chloroplasts, and vacuoles in plant or animal cells;	Bio.5.A relate the functions of different types of biomolecules, including carbohydrates, lipids, proteins, and nucleic acids, to the structure and function of a cell;				Env.11.C research the advantages and disadvantages of "going green" such as organic gardening and farming, natural methods of pest control, hydroponics, xeriscaping, energy-efficient homes and appliances, and hybrid cars.	Aqua.14.F analyze the purpose and effectiveness of human efforts to restore aquatic ecosystems affected by human activities.			
Cells							6.13.A describe the historical development of cell theory and explain how organisms are composed of one or more cells, which come from pre-existing cells and are the basic unit of structure and function;		8.13.A identify the function of the cell membrane, cell wall, nucleus, ribosomes, cytoplasm, mitochondria, chloroplasts, and vacuoles in plant or animal cells;	Bio.5.B compare and contrast prokaryotic and eukaryotic cells, including their complexity, and compare and contrast scientific explanations for cellular complexity;					Aqua.14.B predict effects of chemical, organic, physical, and thermal changes due to humans on the living and nonliving components of an aquatic ecosystem;			
										Bio.11.A explain how matter is conserved and energy is transferred during photosynthesis and cellular respiration using models, including the chemical equations for these processes;								
										Bio.5.C investigate homeostasis through the cellular transport of molecules;								

										Bio.11.B investigate and explain the role of enzymes in facilitating cellular processes.							
Evolutionary Mechanisms								7.13.D describe and give examples of how natural and artificial selection change the occurrence of traits in a population over generations.		<p>Bio.10.A analyze and evaluate how natural selection produces change in populations and not in individuals;</p> <p>Bio.10.B 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;</p> <p>Bio.10.C analyze and evaluate how natural selection may lead to speciation;</p> <p>Bio.10.D analyze evolutionary mechanisms other than natural selection, including genetic drift, gene flow, mutation, and genetic recombination, and their effect on the gene pool of a population.</p> <p>Bio.7.C identify and illustrate changes in DNA and evaluate the significance of these changes; and</p>							
Taxonomic System							6.13.B identify and compare the basic characteristics of organisms, including prokaryotic and eukaryotic, unicellular and multicellular, and autotrophic and heterotrophic;	<p>7.14.A describe the taxonomic system that categorizes organisms based on similarities and differences shared among groups;</p> <p>7.14.B describe the characteristics of the recognized kingdoms and their importance in ecosystems such as bacteria aiding digestion or fungi decomposing organic matter.</p>						Env.5.A identify native plants and animals within a local ecosystem and compare their roles to those of plants and animals in other biomes, including aquatic, grassland, forest, desert, and tundra;	Aqua.13.A compare different traits in aquatic organisms using tools such as dichotomous keys;		
Viruses										Bio.5.D compare the structures of viruses to cells and explain how viruses spread and cause disease.							
Cell Cycle										Bio.6.A explain the importance of the cell cycle to the growth of organisms, including an overview of the stages of the cell cycle and deoxyribonucleic acid (DNA) replication models;							

										Bio.6.C relate disruptions of the cell cycle to how they lead to the development of diseases such as cancer.								
Cellular Specialization										Bio.6.B explain the process of cell specialization through cell differentiation, including the role of environmental factors;								
										Bio.7.B describe the significance of gene expression and explain the process of protein synthesis using models of DNA and ribonucleic acid (RNA);								
Molecular Technologies										Bio.7.D discuss the importance of molecular technologies such as polymerase chain reaction (PCR), gel electrophoresis, and genetic engineering that are applicable in current research and engineering practices.								
Laws and Policies																	Env.13.A describe past and present state and national legislation, including Texas automobile emissions regulations, the National Park Service Act, the Clean Air Act, the Clean Water Act, the Soil and Water Resources Conservation Act, and the Endangered Species Act; and	Aqua.14.E describe the impact such as costs and benefits of various laws and policies such as The Endangered Species Act, right of capture laws, or Clean Water Act on aquatic systems;
																	Env.10.D evaluate indicators of air, soil, and water quality against regulatory standards to determine the health of an ecosystem;	
																	Env.12.D discuss the impact of research and technology on social ethics and legal practices in situations such as the design of new buildings, recycling, or emission standards;	
																	Env.13.B evaluate the goals and effectiveness of past and present international agreements such as the environmental Antarctic Treaty System, the Montreal Protocol, the Kyoto Protocol, and the Paris Climate Accord.	

Key	SE containing blue text aligns with more than one topic. The black text is relevant to the topic in that row.
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