

Grade 7 Science Standards

Unit – Structure, Function, Information Processing	Pacing – 9 weeks
Standards	Eligible Content
<p>3.1.6.A1. Describe the similarities and differences of major physical characteristics in plants, animals, fungi, protists, and bacteria.</p> <p>3.1.7.A1. Describe the similarities and differences of physical characteristics in diverse organisms.</p> <p>3.1.6.A4. Recognize that all organisms are composed of cells and that many organisms are unicellular and must carry out all life functions in one cell.</p> <p>3.1.7.A4. Explain how cells arise from pre-existing cells.</p> <p>3.1.7.A5. Explain how the cell is the basic structural and functional unit of living things.</p> <p>3.1.6.A6. Identify examples of unicellular and multicellular organisms.</p> <p>3.1.7.A6. Identify the levels of organization from cell to organism</p>	<p>S.6.B.1.1.1 Describe how cells carry out the many functions needed to sustain life.</p> <p>S.6.B.1.1.2 Identify examples of unicellular and multi-cellular organisms (i.e., plants, fungi, bacteria, protists, and animals).</p> <p>S.6.B.1.1.3. Explain how many organisms are unicellular and must carry out all life functions in one cell.</p> <p>S.7.B.1.1.1 Describe levels of biological organization from cell to organism.</p> <p>S.7.B.1.2.1 Explain how cells arise from the division of a pre-existing cell.</p> <p>S8B.1.1.1 Describe the structures of living things that help them function effectively in specific ways (e.g., adaptations, characteristics)</p> <p>S8B.1.1.2 Compare similarities and differences in internal structures of organisms (e.g., invertebrate/vertebrate, vascular/nonvascular, single-celled/multi-celled) and external structures (e.g., appendages, body segments, type of covering, size, shape).</p> <p>S8.B.1.1.3 Apply knowledge of characteristic structures to identify or categorize organisms (i.e., plants, animals, fungi, bacteria, and protista).</p> <p>S8.B.1.1.4 Identify the levels of organization from cell to organism and describe how specific structures (parts), which underlie larger systems, enable the system to function as a whole.</p>
<p>Unifying Themes</p>	<p>Inquiry Skills</p>
<p>3.1.6.A8. SCALE Explain why the details of most cells are visible only through a microscope.</p>	<p>Analyze and interpret data</p> <p>Ask questions and define problems</p> <p>Construct explanations and design solutions</p> <p>Develop and use models</p> <p>Engage in argument from evidence</p> <p>Obtain, evaluate, and communicate information</p> <p>Plan and carry out investigations</p> <p>Use mathematics and computational thinking</p>

Unit – Growth, Development, and Reproduction of Organisms	Pacing – 5 weeks
Standards	Eligible Content
<p>3.1.7.A3. Explain why the life cycles of different organisms have varied lengths.</p> <p>3.1.7.B.1 Explain how genetic instructions influence inherited traits. Identify Mendelian patterns of inheritance.</p> <p>3.1.7.B2. Compare sexual reproduction with asexual reproduction.</p> <p>3.1.7.C2. Explain why the extinction of a species may occur when the environment changes. Explain that mutations can alter a gene and are the original source of new variations in a population.</p> <p>3.1.7.A3. Explain why the life cycles of different organisms have varied lengths.</p>	<p>S.7.B.1.2.2 Compare various basic sexual and asexual reproductive processes (e.g., budding, cuttings).</p> <p>S.7.B.2.1.1 Explain how inherited traits (genes) and/or behaviors help organisms survive and reproduce in different environments.</p> <p>S.7.B.2.1.2 Describe how natural selection is an underlying factor in a population’s ability to adapt to change.</p> <p>S.7.B.2.1.3 Explain that adaptations within species (physical, behavioral, physiological) are developed over long periods of time.</p> <p>S8.B.2.2.1 Identify and explain differences between inherited and acquired traits.</p> <p>S8.B.2.2.2 Recognize that the gene is the basic unit of inheritance, that there are dominant and recessive genes, and that traits are inherited.</p> <p>S8.B.3.2.1 Use evidence to explain factors that affect changes in populations (e.g., deforestation, disease, land use, natural disaster, invasive species).</p> <p>S8.B.3.2.2 Use evidence to explain how diversity affects the ecological integrity of natural systems.</p> <p>S8.B.3.2.3 Describe the response of organisms to environmental changes (e.g., changes in climate, hibernation, migration, coloration) and how those changes affect survival.</p>
Unifying Themes	Inquiry Skills
<p>3.1.7.B5 PATTERNS Compare and contrast observable patterns in the physical characteristics across families, strains, and species.</p>	<p>Analyze and interpret data</p> <p>Ask questions and define problems</p> <p>Construct explanations and design solutions</p> <p>Develop and use models</p> <p>Engage in argument from evidence</p> <p>Obtain, evaluate, and communicate information</p> <p>Plan and carry out investigations</p> <p>Use mathematics and computational thinking</p>

Grade 7 Science Standards

Unit - Matter and Energy in Organisms and Ecosystems	Pacing – 9 weeks
Standards	Eligible Content
<p>3.1.7.A3. Explain why the life cycles of different organisms have varied lengths.</p> <p>3.1.6.A2. Describe how energy derived from the sun is used by plants to produce sugars (photosynthesis) and is transferred within a food chain from producers (plants) to consumers to decomposers.</p> <p>3.1.7.A2. Describe how organisms obtain and use energy throughout their lives.</p> <p>4.1.7.C. Explain the flow of energy within an ecosystem. Compare and contrast the flow of energy between organisms in different habitats. Explain the concept of trophic levels.</p> <p>4.2.7.A. Explain how water enters, moves through and leaves a watershed. Explain the concept of stream order. Describe factors that affect the flow and water quality within a watershed.</p> <p>4.2.8.A. Describe factors that affect the quality of ground and surface waters.</p> <p>4.2.6.B. Describe the characteristics of soils found in a wetland.</p> <p>4.2.7.B. Explain the primary functions of a wetland within a watershed. Providing habitat, flood control, water purification. Serving as buffer zones, wildlife propagation areas, and food and fiber systems.</p> <p>4.2.8 B. Explain the value of wetlands to other living things.</p> <p>4.3.7.A. Explain how products are derived from natural resources. Describe the process of converting raw materials to consumer goods. Differentiate between renewable and nonrenewable resources.</p> <p>4.3.7.B. Explain the distribution and management of natural resources. Differentiate between resource uses: conservation, preservation, and exploitation.</p>	<p>S.6.B.3.2.1 Compare the usage of fossil fuels and alternative energy resources (e.g., oil, natural gas, coal, wind, solar, water).</p> <p>S.7.B.3.3.1 Explain how renewable and/or nonrenewable resources provide for human needs (i.e., energy, food, water, clothing, and shelter).</p> <p>S.7.B.3.3.2 Explain how the use of renewable and/or nonrenewable resources affects the environment.</p> <p>S8.B.3.1.1 Explain the flow of energy through an ecosystem (e.g., food chains, food webs).</p> <p>S8.B.3.1.2 Identify major biomes and describe abiotic and biotic components (e.g., abiotic: different soil types, air, water sunlight; biotic: soil microbes, decomposers).</p> <p>S8.B.3.1.3 Explain relationships among organisms (e.g., producers/consumers, predator/prey) in an ecosystem.</p> <p>S8.B.3.3.1 Explain how human activities may affect local, regional, and global environments.</p> <p>S8.B.3.3.2 Explain how renewable and nonrenewable resources provide for human needs (i.e., energy, food, water, clothing, and shelter).</p> <p>S8.B.3.3.3 Describe how waste management affects the environment (e.g., recycling, composting, landfills, incineration, sewage treatment).</p> <p>S8.B.3.3.4 Explain the long-term effects of using integrated pest management (e.g., herbicides, natural predators, biogenetics) on the environment.</p>
Unifying Themes	Inquiry Skills
	<p>Analyze and interpret data</p> <p>Ask questions and define problems</p> <p>Construct explanations and design solutions</p> <p>Develop and use models</p> <p>Engage in argument from evidence</p>

Grade 7 Science Standards

	Obtain, evaluate, and communicate information Plan and carry out investigations Use mathematics and computational thinking
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Grade 7 Science Standards

Unit - Interdependent Relationships in Ecosystems	Pacing – 9 weeks
Standards	Eligible Content
<p>4.1.7.A Describe the relationships between biotic and abiotic components of an ecosystem.</p> <p>4.1.7.B. Explain biochemical cycles within an ecosystem.</p> <p>4.1.6.D. Identify reasons why organisms become threatened, endangered, and extinct.</p> <p>4.1.7.D. Explain how biological diversity relates to the viability of ecosystems. Compare and contrast monoculture with diverse ecosystems. Explain how biological diversity relates to the ability of an ecosystem to adapt to change. Explain how an adaptation is an inherited, structure, function, or behavior that helps and organism survive and reproduce.</p> <p>4.1.8.D. Use the theory of natural selection to examine the causes and consequences of extinction.</p> <p>4.1.7.E. Identify factors that contribute to change in natural and human-made systems. Explain the processes of primary and secondary succession in a given ecosystem.</p> <p>4.2.6.C. Identify natural and human-made factors that affect water quality.</p> <p>4.2.7.C Use appropriate tools and techniques to analyze a freshwater environment. Interpret physical, chemical, and biological data as a means of assessing the environmental quality of a freshwater environment.</p> <p>4.2.8.C. Describe how a diversity index is used to assess water quality.</p>	<p>S.6.B.2.1.1 Distinguish between instinctive and learned animal behaviors that relate to survival.</p> <p>S.6.B.2.1.2 Recognize that extinction of a species occurs when the environment changes and the adaptive characteristics of a species are insufficient to allow its survival.</p> <p>S.7.B.1.1.1 Describe levels of biological organization from cell to organism.</p> <p>S.7.B.1.1.2 Describe how specific structures in living things (from cell to organism) help them function effectively in specific ways (e.g., chlorophyll in plant cells-photosynthesis; root hairs-increased surface area; beak structures in birds- food gathering; cacti spines-protection from predators).</p> <p>S.7.B.1.1.3 Explain how characteristic similarities and differences (from cell to organism) are used to identify and/or categorize organisms.</p> <p>S.7.B.3.1.1 Describe relationships (e.g. ,predator/prey competition, symbiosis) between organisms in different ecosystems.</p> <p>S.7.B.3.1.2 Identify the major biomes (terrestrial and aquatic) and describe their characteristic biotic and abiotic factors.</p> <p>S.7.B.3.2.1 Identify and describe factors that cause and/or influence changes in populations (e.g., deforestation, disease, land use, natural disaster, invasive species).</p> <p>S.7.B.3.2.2 Explain how diversity affects the integrity of natural ecological systems.</p> <p>S.7.B.3.2.3 Describe how human interactions with the environment impact an ecosystem (e.g., road construction, pollution, urban development, dam building/removal).</p> <p>S7.B.3.2.4 Explain how changes in environmental conditions can affect the survival of a population and entire species (e.g., climate, hibernation, migration, coloration).</p>
Unifying Themes	Inquiry Skills
<p>3.1.7.A8 MODELS Apply the appropriate models to show interactions among organisms in an environment.</p> <p>3.1.8.A8 CHANGE AND CONSTANCY Explain mechanisms organisms use to adapt to their environment.</p>	<p>Analyze and interpret data</p> <p>Ask questions and define problems</p> <p>Construct explanations and design solutions</p> <p>Develop and use models</p> <p>Engage in argument from evidence</p> <p>Obtain, evaluate, and communicate information</p> <p>Plan and carry out investigations</p> <p>Use mathematics and computational thinking</p>

Grade 7 Science Standards

Unit - Natural Selection and Adaptations	Pacing – 4 weeks
Standards	Eligible Content
<p>3.1.6.A5. Describe basic structures that plants and animals have that contribute to their ability to make or find food and reproduce.</p> <p>3.1.6.C1. Differentiate between instinctive and learned animal behaviors that relate to survival.</p> <p>3.1.7.C1. Describe how natural selection is an underlying factor in a population’s ability to adapt to changes.</p> <p>3.1.8.C1. Explain how reproductive success coupled with advantageous traits over many generations contributes to natural selection.</p> <p>3.1.8.C3. Identify evidence drawn from geology, fossils, and comparative anatomy that provides the basis for the theory of evolution.</p>	<p>S.6.B.3.1.1 Describe the behavioral and physical responses of organisms to environmental changes and how those responses affect survival.</p> <p>S.7.B.2.2.1 Identify and explain differences between inherited and acquired traits.</p> <p>S.7.B.2.2.2 Recognize evidence that the gene is the basic unit of inheritance and explain the effect of dominant and recessive genes on inherited traits.</p> <p>S.7.B.2.2.3 Explain how mutations can alter a gene and are a source of new variations in a population.</p> <p>S.7.B.2.2.4 Describe how selective breeding or biotechnologies can change the genetic makeup of an organism (e.g., domesticated dogs, horses, cows; crops, hybrid plants; integrated pest management).</p> <p>S8.B.2.1.1 Explain how inherited structures or behaviors help organisms survive and reproduce in different environments.</p> <p>S8.B.2.1.2 Explain how different adaptations in individuals of the same species may affect survivability or reproduction success.</p> <p>S8.B.2.1.3 Explain that mutations can alter a gene and are the original source of new variations.</p> <p>Describe how selective breeding or biotechnology can change the genetic makeup of organisms.</p> <p>S8.B.2.1.5 Explain that adaptations are developed over long periods of time and are passed from one generation to another.</p>
Unifying Themes	Inquiry Skills
<p>3.1.7.C3. CONSTANCY AND CHANGE Identify evidence drawn from geology, fossils, and comparative anatomy that provides the basis for the theory of evolution.</p>	<p>Analyze and interpret data</p> <p>Ask questions and define problems</p> <p>Construct explanations and design solutions</p> <p>Develop and use models</p> <p>Engage in argument from evidence</p> <p>Obtain, evaluate, and communicate information</p> <p>Plan and carry out investigations</p> <p>Use mathematics and computational thinking</p>