

Animals in Motion

Correlated Standards by Grade

Grade 2

NGSS

2-LS2-2. Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.

2-LS4-1. Make observations of plants and animals to compare the diversity of life in different habitats.

ACOS

SC.2.6. Design and conduct models to simulate how animals disperse seeds or pollinate plants.

SC.2.7. Obtain information from literature and other media to illustrate that there are many different kinds of living things and that they exist in different places on land and in water.

MSF

2.LS.3. Develop and demonstrate an understanding of the characteristics, structures, cycles, and environments of organisms.

2.LS.3. D. Compare the life cycles of plants and animals.

2.LS.3. E. Investigate and explain the interdependence of plants and animals.

TASS

2.LS2.1. Develop and use models to compare how animals depend on their surroundings and other living things to meet their needs in the places they live.

2.LS2.2. Predict what happens to animals when the environment changes.

2.ETS1,1, Define a simple problem that can be solved through the development of a new or improved object or tool by asking questions, making observations, and gather accurate information about a situation people want to change.

GPS

S2L1. Students will investigate the life cycles of different living organisms.

S2CS4. Students will use the ideas of system, model, change, and scale in exploring scientific and technological matters.

S2CS5. Students will communicate scientific ideas and activities clearly.

S2CS6. Students will be familiar with the character of scientific knowledge and how it is achieved.

S2CS7. Students will understand the important features of the process of scientific inquiry.

Grade 3

NGSS

3-LS1-1. Develop models to describe that organisms have unique and diverse life cycles but all have in common, birth, growth, reproduction, and death.

3-LS2-1. Construct an argument that some animals form groups that help members survive.

3-LS3-2. Use evidence to support the explanation that traits can be influenced by the environment.

ACOS

SC.3.6. Create representations to explain the unique and diverse life cycles of organisms other than humans, including commonalities such as birth, growth, reproduction, and death.

SC.3.7. Examine data to provide evidence that plants and animals, excluding humans, have traits inherited from parents and that variations of these traits exist in groups of similar organisms,

SC.3.8. Engage in argument from evidence to justify that traits can be influenced by the environment.

MSF

3.LS.3. Describe the characteristics, structures, life cycles, and environments of organisms. A, Research and explain diverse life forms live in different environments and the structures that serve different functions in their survival.

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3.I.1. Apply concepts involved in a scientific investigation.

TASS

3.LS1.1. Analyze the internal and external structures that aquatic land animals and plants have to support survival, growth, behavior, and reproduction.

3.LS2.1. Construct an argument to explain why some animals benefit from forming groups.

GPS

S3L1. Students will investigate the habitats of different organisms and the dependence of organisms on their habitat.

S3CS1. Students will be aware of the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts to understand how the world works.

S3CS4. Students will use ideas of system, model, change, and scale in exploring scientific and technological matters.

S3CS5. Students will communicate scientific ideas and activities clearly.

S3CS6. Students will question scientific claims and arguments effectively.

S3CS7. Students will be familiar with the character of scientific knowledge and how it is achieved.

S3CS8. Students will understand the important features of the process of scientific inquiry.

Grade 4

NGSS

4-LS1-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.

4-LS1-2. Use a model to describe that animals receive different types of information through their senses, process information in their brain, and respond to the information in different ways.

ACOS

SC.4.9. Examine evidence to support an argument that the internal and external structures of plants and animals function to support survival, growth, behavior, and reproduction.

SC.4.11. Investigate different ways animals receive information through the senses, process that information, and respond to it in different ways.

MSF

4.LS.3.C. Compare characteristics of organisms, including growth and development, reproduction, acquisition and use of energy, and response to environment.

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4.I.1. Explain and use skills necessary to conduct scientific inquiry.

TASS

4.LS2.1. Support an argument with evidence that plants get the materials they need for growth and reproduction chiefly through a process in which they use carbon dioxide from the air, water, and energy from the sun to produce sugars, plant materials, and waste (oxygen); and that this process is called photosynthesis.

4.LS2.3. Using information about the roles of organisms, evaluate how those roles in food chains are interconnected in a food web, and communicate how the organisms are continuously able to meet their needs in a stable food web.

4.LS2.4. Develop and use models to determine the effects of introducing a species to, or removing a species from, an ecosystem and how either one can damage the balance of an ecosystem.

4.ESS2.3. Provide examples to support the claim that organisms affect the physical characteristics of their regions.

4.ETS2.2. Determine the effectiveness of multiple solutions to a design problem given the criteria and the constraints.

GPS

S4L1. Students will describe the roles of organisms and the flow of energy within an ecosystem

S4CS1. Students will be aware of the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts to understand how the world works.

S4CS4. Students will use ideas of system, model, change, and scale in exploring scientific and technological matters.

S4CS5. Students will communicate scientific ideas and activities clearly.

S4CS6. Students will question scientific claims and arguments effectively.

S4CS7. Students will be familiar with the character of scientific knowledge and how it is achieved.

S4CS8. Students will understand the important features of the process of scientific inquiry.

Grade 5

NGSS

5-PS3-1. Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.

5-LS2-1. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

5-ESS2-1. Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.

ACOS

SC.5.11. Create a model to illustrate the transfer of matter along producers, consumers, including scavengers and decomposers, and the environment.

SC.5.14. Use a model to represent how any two systems, specifically the atmosphere, biosphere, geosphere, and/or hydrosphere, interact and support life.

MFS

5.LS.3.E. Give examples of how consumers and producers are related in food chains and food webs.

5.ES.4.A. Categorize Earth's materials. Rocks, minerals, soils, water, atmospheric gases. Layers of the atmosphere, hydrosphere, and lithosphere.

5.I.1. Develop and demonstrate an understanding of scientific inquiry using process skills.

TASS

5.LS1.1. Compare and contrast animal responses that are instinctual vs. those that are gathered through senses, processed, and stored as memories to guide their actions.

GPS

S5L4. Students will relate how microorganisms benefit or harm larger organisms.

S5CS1. Students will be aware of the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts to understand how the world works.

S5CS4. Students will use ideas of system, model, change, and scale in exploring scientific and technological matters.

S5CS5. Students will communicate scientific ideas and activities clearly.

S5CS6. Students will question scientific claims and arguments effectively.

S5CS7. Students will be familiar with the character of scientific knowledge and how it is achieved.

S5CS8. Students will understand the important features of the process of scientific inquiry.

Middle School

NGSS

MS-LS1-4. Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively.

MS-LS1-6. Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.

MS-LS2-1. Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.

MS-LS2-2. Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.

MS-LS2-3. Develop a model to describe the cycling of matter and flow of energy among living and non-living parts of an ecosystem.

MS-ESS2-1. Develop a model to describe the cycling of Earth's materials and the flow of energy that drives the process.

ACOS

SC.7.10. Use evidence and scientific reasoning to explain how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of both animals and plants.

SC.7.5. Examine the cycling of matter between abiotic and biotic parts of ecosystems to explain the flow of energy and the conservation of matter.

SC.7.6. Analyze and interpret data to provide evidence regarding how resource availability impacts individual organisms as well as populations of organisms within an ecosystem.

SC.7.8. Construct an explanation to predict patterns of interactions in different ecosystems in terms of the relationships between and among organisms.

SC.6.7. Use models to construct explanations of the various biogeochemical cycles of Earth (water, carbon, nitrogen) and the flow of energy that drives these processes.

SC.7.7. Use empirical evidence from patterns and data to demonstrate how changes to physical or biological components of an ecosystem can lead to shifts in populations.

MFS

6.LS.3.D. Describe and summarize how an egg and sperm unite in the reproduction of angiosperms and gymnosperms.

6.LS.3.A. Describe and predict interactions (among and within populations) and the effects of these interactions on population growth that include the effects on available resources.

6.I.1. Conduct a scientific investigation utilizing appropriate process skills.

8.LS.3.E. Explain energy flow in a specified system.

6.LS.3.A. Describe and predict interactions (among and within populations) and the effects of these interactions on population growth that include the effects on available resources.

7.LS.3.A. Assess how an organism's chances for survival are influenced by adaptations to its environment.

8.LS.3.A. Analyze how adaptations to a particular environment can increase an organism's survival and reproduction and relate organisms and their ecological niches to evolutionary change and extinction.

7.LS.3.E. Compare and contrast how organisms obtain and utilize matter and energy.

6.ESS.4.A. Compare and contrast the relative positions and components of the Earth's crust.

TASS

7.LS1.6. Develop an argument based on empirical evidence and scientific reasoning to explain how behavioral and structural adaptations in animals and plants affect the probability of survival and reproductive success.

6.LS2.3. Draw conclusions about the transfer of energy through a food web and energy pyramid in an ecosystem.

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6.LS4.2. Design a possible solution for maintaining biodiversity of ecosystems while still providing necessary human resources without disrupting environmental equilibrium.

L.LS1.9. Construct a scientific explanation based on compiled evidence for the processes of photosynthesis, cellular respiration, and anaerobic respiration in the cycling of matter and flow of energy into and out of organisms.

8.ESS2.3. Describe the relationship between the processes and forces that create igneous, sedimentary, and metamorphic rocks.

GPS

S7L4. Students will examine the dependence of organisms on one another and their environments.

S7L1. Students will investigate the diversity of living organisms and how they can be compared scientifically.

S6-8CS1. Students will be aware of the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts to understand how the world works.

S6-8CS5. Students will use ideas of system, model, change, and scale in exploring scientific and technological matters.

S6-8CS6. Students will communicate scientific ideas and activities clearly.

S6-8CS7. Students will question scientific claims and arguments effectively.

S6-8CS8. Students will be familiar with the character of scientific knowledge and how it is achieved.

High School

NGSS

HS-LS2-5. Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere.

HS-LS2-6. Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.

HS-LS4-4. Construct an explanation based on evidence for how natural selection leads to adaptation of populations.

HS-LS4-5. Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.

HS-ESS2-6. Develop a quantitative model to describe the cycling of carbon among the hydrosphere, atmosphere, geosphere, and biosphere.

ACOS

BIO.HS.6. Analyze and interpret data from investigations to explain the role of products and reactants of photosynthesis and cellular respiration in the cycling of matter and the flow of energy.

ES.HS.2. Use models to illustrate and communicate the role of photosynthesis and cellular respiration as carbon cycles through the biosphere, atmosphere, hydrosphere, and geosphere.

BIO.HS.7. Develop and use models to illustrate examples of ecological hierarchy levels, including biosphere, biome, ecosystem, community, population, and organism.

BIO.HS.14. Analyze and interpret data to evaluate adaptations resulting from natural and artificial selection that may cause changes in populations over time.

BIO.HS.15. Engage in argument from evidence to explain how the diversity of organisms is affected by overpopulation of species, variation due to genetic mutations, and competition for limited resources.

PS.HS.8. Develop and use models to describe the cycling of matter (carbon, nitrogen, water) and flow of energy between abiotic and biotic factors in ecosystems.

ES.HS.9. Develop and use models to trace the flow of water, nitrogen, and phosphorus through the hydrosphere, atmosphere, geosphere, and biosphere.

MSF

HS.B.3. Investigate and explain how organisms interact with their environment.

HS.Zoo.3. Differentiate among animal life cycles, behaviors, adaptations, and relationships.

HS.I.1. Apply inquiry-based and problem-solving processes and skills to scientific investigations.

HS.BI.6. Apply the concept of evolution to the diversity of organisms.

HS.BII.4. Demonstrate an understanding of the factors that contribute to evolutionary theory and natural selection.

HS.ESS.5. Apply an understanding of ecological factors to explain relationships between Earth systems.

TASS

BIO1.LS4.1. Evaluate scientific data collected from analysis of molecular sequences, fossil records, biogeography, and embryology. Identify chronological patterns of change and communicate that biological evolution is supported by multiple lines of empirical evidence that identify similarities inherited from a common ancestor.

BIO1.LS2.5. Analyze examples of ecological succession, identifying and explaining the order of events responsible for the formation of a new ecosystem in response to extreme fluctuations in environmental conditions or catastrophic events.

BIO1.LS2.2. Create a model tracking carbon atoms between inorganic and organic molecules in an ecosystem. Explain human impacts on climate based on this model.

GPS

SB3. Students will derive the relationship between single-celled and multi-celled organisms and the increasing complexity of systems.

SB3.A. Explain the cycling of energy through the process of photosynthesis and respiration.

SBO4. Students will explore the defense systems of plants and recognize the impact of plant diseases on the biosphere.

SB4. Students will assess the dependence of all organisms on one another and the flow of energy and matter within their ecosystems.

SES1. Students will investigate the composition and formation of Earth systems, including the Earth's relationship to the solar system.E. Identify the transformations and major reservoirs that make up the rock cycle, hydrologic cycle, carbon cycle, and other important geochemical cycles.

SCSh1. Students will evaluate the importance of curiosity, honesty, openness, and skepticism in science.

SCSh3. Students will identify and investigate problems scientifically.