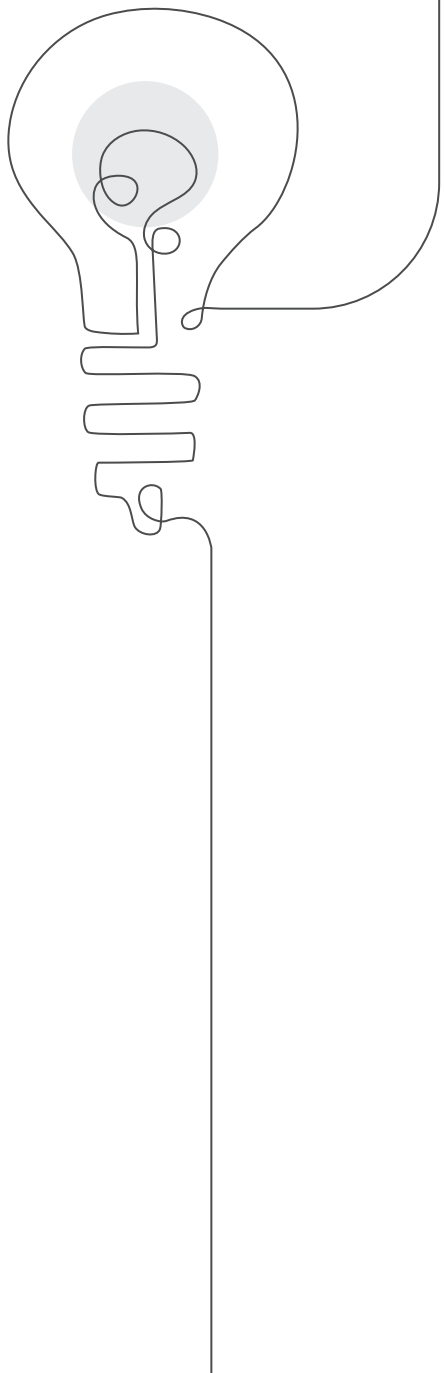
Amplify Science



K–5 performance expectation alignment

Next Generation Science Standards

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Earth and Space Science

Performance expectation	Summary	Amplify unit(s) that focally addresses performance expecation	Amplify unit(s) that additionally addresses performance expecation
K-ESS2-1: Earth's Systems	Use and share observations of local weather conditions to describe patterns over time.	**Sunlight and Weather**	
K-ESS2-2: Earth's Systems	Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.	**Needs of Plants and Animals**	
K-ESS3-1: Earth and Human Activity	Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.	**Needs of Plants and Animals**	
K-ESS3-2: Earth and Human Activity	Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.	**Sunlight and Weather**	
K-ESS3-3: Earth and Human Activity	Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.	**Needs of Plants and Animals**	
1-ESS1-1: Earth's Place in the Universe	Use observations of the sun, moon, and stars to describe patterns that can be predicted.	**Spinning Earth**	
1-ESS1-2: Earth's Place in the Universe	Make observations at different times of year to relate the amount of daylight to the time of year.	**Spinning Earth**	
2-ESS1-1: Earth's Place in the Universe	Use information from several sources to provide evidence that Earth events can occur quickly or slowly.	**Changing Landforms**	
2-ESS2-1: Earth's Systems	Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.	**Changing Landforms**	
2-ESS2-2: Earth's Systems	Develop a model to represent the shapes and kinds of land and bodies of water in an area.	**Changing Landforms**	Plant and Animal Relationships
2-ESS2-3: Earth's Systems	Obtain information to identify where water is found on Earth and that it can be solid or liquid. The performance expectations above were developed using the following elements from the NRC document "A Framework for K–12 Science Education."	**Changing Landforms**	
3-ESS2-1: Earth's Systems	Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.	**Weather and Climate**	
3-ESS2-2: Earth's Systems	Obtain and combine information to describe climates in different regions of the world.	**Weather and Climate**	

Performance expectation	Summary	Amplify unit(s) that focally addresses performance expecation	Amplify unit(s) that additionally addresses performance expecation
3-ESS3-1: Earth and Human Activity	Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.	**Weather and Climate**	
4-ESS1-1: Earth's Place in the Universe	Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.	**Earth's Features**	
4-ESS2-1: Earth's Systems	Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.	**Earth's Features**	
4-ESS2-2: Earth's Systems	Analyze and interpret data from maps to describe patterns of Earth's features.	**Earth's Features**	
4-ESS3-1: Earth and Human Activity	Obtain and combine information to describe how energy and fuels are derived from natural resources and that their uses affect the environment.	**Energy Conversions**	
4-ESS3-2: Earth and Human Activity	Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.	**Earth's Features** **Waves, Energy, and Information**	Energy Conversions
5-ESS1-1: Earth's Place in the Universe	Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from Earth.	**Patterns of Earth and Sky**	
5-ESS1-2: Earth's Place in the Universe	Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.	**Patterns of Earth and Sky**	
5-ESS2-1: Earth's Systems	Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.	**The Earth System**	
5-ESS2-2: Earth's Systems	Describe and graph the amounts of salt water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.	**The Earth System**	
5-ESS3-1: Earth and Human Activity	Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.	**The Earth System** **Ecoysystem Restoration**	

Life Science

Performance expectation	Summary	Amplify unit(s) that focally addresses performance expecation	Amplify unit(s) that additionally addresses performance expecation
K-LS1-1: From Molecules to Organisms: Structures and Processes	Use observations to describe patterns of what plants and animals (including humans) need to survive.	Needs of Plants and Animals	
1-LS1-1: From Molecules to Organisms: Structures and Processes	Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.	Animal and Plant Defenses	
1-LS1-2: From Molecules to Organisms: Structures and Processes	Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.	Animal and Plant Defenses	
1-LS3-1: Heredity: Inheritance and Variation of Traits	Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.	Animal and Plant Defenses	
2-LS2-1: Ecosystems: Interactions, Energy, and Dynamics	Plan and conduct an investigation to determine if plants need sunlight and water to grow.	Plant and Animal Relationships	
2-LS2-2: Ecosystems: Interactions, Energy, and Dynamics	Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.	Plant and Animal Relationships	
2-LS4-1: Biological Evolution: Unity and Diversity	Make observations of plants and animals to compare the diversity of life in different habitats.	Plant and Animal Relationships	
3-LS1-1: From Molecules to Organisms: Structures and Processes	Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.	Inheritance and Traits	
3-LS2-1: Ecosystems: Interactions, Energy, and Dynamics	Construct an argument that some animals form groups that help members survive.	Inheritance and Traits	
3-LS3-1: Heredity: Inheritance and Variation of Traits	Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.	Inheritance and Traits	
3-LS3-2: Heredity: Inheritance and Variation of Traits	Use evidence to support the explanation that traits can be influenced by the environment.	Inheritance and Traits	
3-LS4-1: Biological Evolution: Unity and Diversity	Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.	Environments and Survival	

Performance expectation	Summary	Amplify unit(s) that focally addresses performance expecation	Amplify unit(s) that additionally addresses performance expecation
3-LS4-2: Biological Evolution: Unity and Diversity	Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.	**Environments and Survival**	
3-LS4-3: Biological Evolution: Unity and Diversity	Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.	**Weather and Climate**	Environments and Survival
3-LS4-4: Biological Evolution: Unity and Diversity	Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.	**Environments and Survival**	
4-LS1-1: From Molecules to Organisms: Structures and Processes	Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.	**Vision and Light**	
4-LS1-2: From Molecules to Organisms: Structures and Processes	Use a model to describe how animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.	**Vision and Light**	Waves, Energy, and Information
5-PS3-1: Energy	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.	**Ecoysystem Restoration**	
5-LS1-1: From Molecules to Organisms: Structures and Processes	Support an argument that plants get the materials they need for growth chiefly from air and water.	**Ecoysystem Restoration**	
5-LS2-1: Ecosystems: Interactions, Energy, and Dynamics	Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.	**Ecoysystem Restoration**	The Earth System

Physical Science

Performance expectation	Summary	Amplify unit(s) that focally addresses performance expecation	Amplify unit(s) that additionally addresses performance expecation
K-PS2-1: Motion and Stability: Forces and Interactions	Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.	Pushes and Pulls	
K-PS2-2: Motion and Stability: Forces and Interactions	Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull.	Pushes and Pulls	
K-PS3-1: Energy	Make observations to determine the effect of sunlight on Earth's surface.	Sunlight and Weather	
K-PS3-2: Energy	Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.	Sunlight and Weather	
1-PS4-1: Waves and their Applications in Technologies for Information Transfer	Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.	Light and Sound	
1-PS4-2: Waves and their Applications in Technologies for Information Transfer	Make observations to construct an evidence-based account that objects can be seen only when illuminated.	Light and Sound	
1-PS4-3: Waves and their Applications in Technologies for Information Transfer	Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light.	Light and Sound	
1-PS4-4: Waves and their Applications in Technologies for Information Transfer	Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.	Light and Sound	
2-PS1-1: Matter and Its Interactions	Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.	Properties of Materials	
2-PS1-2: Matter and Its Interactions	Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.	Properties of Materials	
2-PS1-3: Matter and Its Interactions	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object.	Properties of Materials	
2-PS1-4: Matter and Its Interactions	Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.	Properties of Materials	
3-PS2-1: Motion and Stability: Forces and Interactions	Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.	Balancing Forces	

Performance expectation	Summary	Amplify unit(s) that focally addresses performance expecation	Amplify unit(s) that additionally addresses performance expecation
3-PS2-2: Motion and Stability: Forces and Interactions	Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.	**Balancing Forces**	
3-PS2-3: Motion and Stability: Forces and Interactions	Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.	**Balancing Forces**	
3-PS2-4: Motion and Stability: Forces and Interactions	Define a simple design problem that can be solved by applying scientific ideas about magnets.	**Balancing Forces**	
4-PS3-1: Energy	Use evidence to construct an explanation relating the speed of an object to the energy of that object.	**Energy Conversions**	
4-PS3-2: Energy	Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.	**Energy Conversions** **Waves, Energy, and Information**	
4-PS3-3: Energy	Ask questions and predict outcomes about the changes in energy that occur when objects collide.	**Waves, Energy, and Information**	Energy Conversions
4-PS3-4: Energy	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	**Energy Conversions**	
4-PS4-1: Waves and their Applications in Technologies for Information	Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move.	**Waves, Energy, and Information**	
4-PS4-2: Waves and their Applications in Technologies for Information	Develop a model to describe how light reflecting from objects and entering the eye allows objects to be seen.	**Vision and Light**	
4-PS4-3: Waves and their Applications in Technologies for Information	Generate and compare multiple solutions that use patterns to transfer information.	**Waves, Energy, and Information**	
5-PS1-1: Matter and Its Interactions	Develop a model to describe how matter is made of particles too small to be seen.	**Modeling Matter** **Ecoysystem Restoration** **The Earth System**	
5-PS1-2: Matter and Its Interactions	Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved.	**Modeling Matter** **The Earth System**	
5-PS1-3: Matter and Its Interactions	Make observations and measurements to identify materials based on their properties.	**Modeling Matter**	The Earth System
5-PS1-4: Matter and Its Interactions	Conduct an investigation to determine whether the mixing of two or more substances results in new substances.	**The Earth System**	Ecostem Restoration Modeling Matter
5-PS2-1: Motion and Stability: Forces and Interactions	Support an argument that the gravitational force exerted by Earth on objects is directed down.	**Patterns of Earth and Sky**	

Engineering and Design

Performance expectation	Summary	Amplify unit(s) that focally addresses performance expecation	Amplify unit(s) that additionally addresses performance expecation
K-2-ETS1-1: Engineering and Design	Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.	**Pushes and Pulls (K)** **Light and Sound (1)** **Properties of Materials (2)**	Needs of Plants and Animals (K) Sunlight and Weather (K) Animal and Plant Defenses (1) Changing Landforms (2)
K-2-ETS1-2: Engineering and Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.	**Pushes and Pulls (K)** **Light and Sound (1)** **Properties of Materials (2)**	Needs of Plants and Animals (K) Sunlight and Weather (K) Animal and Plant Defenses (1)
K-2-ETS1-3: Engineering and Design	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.	**Pushes and Pulls (K)** **Light and Sound (1)** **Properties of Materials (2)**	
3-5-ETS1-1: Engineering and Design	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.	**Enironments and Survival (3)** **Energy Conversions (4)** **The Earth System (5)**	Balancing Forces (3) Weather and Climate (3) Ecostem Restoration (5)
3-5-ETS1-2: Engineering and Design	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.	**Enironments and Survival (3)** **Energy Conversions (4)** **The Earth System (5)**	Balancing Forces (3) Weather and Climate (3) Waves, Energy, and Information (4) Ecostem Restoration (5) Modeling Matter (5)
3-5-ETS1-3: Engineering and Design	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	**Enironments and Survival (3)** **Energy Conversions (4)** **The Earth System (5)**	Weather and Climate (3) Waves, Energy, and Information (4)

Elementary curriculum course structure

Kindergarten

- Needs of Plants and Animals
- Pushes and Pulls
- Sunlight and Weather

Grade 1

- Animal and Plant Defenses
- Light and Sound
- Spinning Earth

Grade 2

- Plant and Animal Relationships
- Properties of Materials
- Changing Landforms

Grade 3

- Balancing Forces
- Inheritance and Traits
- Environments and Survival
- Weather and Climate

Grade 4

- Energy Conversions
- Vision and Light
- Earth's Features
- Waves, Energy, and Information

Grade 5

- Patterns of Earth and Sky
- Modeling Matter
- The Earth System
- Ecosystem Restoration

For more information on Amplify Science, visit **amplify.com/science**.

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