

SCIENCE 3D

DESERT MONSTER

SCIENCE PERFORMANCE EXPECTATIONS AND DISCIPLINARY CORE IDEAS

In the Elementary School Mission (NGSS Grade 4), students will address the general topics below. For a complete list of NGSS standards covered in each segment of the Mission, continue reading after the general standards. *Note: Be sure to complete the **Mission Reader** and **Mission Research** before viewing the full **Mission Video**. Explore [How to Use Science 3D](#) to get suggestions on how to pace the Mission and options for the order of activities. Math and Language Arts standards will be added shortly.*

- In the **Mission Reader**, *Desert Monster*, students will learn about Gila monsters, desert biomes, weather and climate, how landscapes change through time, and the use of topographic maps and GPS. They will also explore plant and animal life cycles, and how their traits help them survive.
- During **Mission Research**, students will investigate different types of plants. They will explore plant life cycles, structures, and how they adapt to their environment.
- In the **Science Mission**, students will refresh their knowledge on the internal and external structures that help Gila monsters survive. Then, they will use a topographic map and data from the field to describe the desert habitat of Gila monsters and predict how they might respond to a change in the climate.
- In the **STEM Project**, students will explore the similarities between natural and human solutions to problems and understand how nature can provide inspiration for engineering solutions. Then, they will apply their understanding to design solutions to challenges of people living in deserts.
- The **Explore Your Backyard** has multiple activity options. In the first activity, students will create a landform map of an imaginary world. They'll describe how their world was shaped by constructive and destructive processes. In the second activity, students will use online resources to explore satellite maps of their local environment or a location of their choosing. In the third activity, they will create a map of a local area and provide an argument for how different landforms were created.

SCIENCE/ENGINEERING AND DESIGN DISCIPLINARY CORE IDEAS AND PERFORMANCE EXPECTATIONS

MISSION READER

- 4-PS3-2 Definitions of Energy: energy can be moved from place to place by moving objects or through sound, light, or electric currents.
- PS3.B Energy and energy transfer.
- 4-LS-1 Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior and reproduction.
- LS1.A Structure and function.
- 4-ESS1-1 Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.
- 4-ESS2-1 Make observations +/- measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind or vegetation.
- Additional content: Insulators and conductors, erosion and deposition.

MISSION RESEARCH

- 4-LS-1 Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior and reproduction.
- LS1.A Structure and function.
- PE 4-ESS3-2 Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.
- Additional content: Life cycles.

SCIENCE MISSION

- 4-LS-1 Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior and reproduction.
- LS1.A Structure and function.
- 4-ESS2-2 Analyze and interpret data from maps to describe patterns of Earth's features.
- Additional content: Responses to environmental change (natural and human caused).

STEM PROJECT

- 3-5-ETS1-1 Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
- 3-5-ETS1-2 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.
- ETS1.B Developing possible solutions: communicating with peers about proposed solutions is important and can improve design.
- ETS1.A Defining and delimiting engineering problems.
- 4-ESS3-2 Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.

EXPLORE YOUR BACKYARD

- 4-ESS2-2 Analyze and interpret data from maps to describe patterns of Earth's features.
Additional content: Landforms and water shaping the land.

CROSS CUTTING CONCEPTS

- Patterns: [Mission Research](#), [Science Mission](#)
Cause and effect: mechanisms and predictions: [Mission Reader](#), [Mission Research](#), [Science Mission](#), [STEM Project](#)
Scale, proportion and quantity: [Science Mission](#)
System and system models: [Mission Reader](#)
Energy and matter: flows, cycles and conservation: [Mission Reader](#), [STEM Project](#)
Structure and function: [Mission Reader](#), [Mission Research](#), [Science Mission](#), [STEM Project](#)
Stability and change: [Mission Reader](#), [Science Mission](#), [STEM Project](#), [Explore Your Backyard](#)

CONNECTION TO ENGINEERING, TECHNOLOGY AND APPLICATIONS OF SCIENCE

- Interdependence of science, engineering and technology: [Mission Reader](#), [Science Mission](#), [Explore Your Backyard](#)
Influence of science, engineering and technology on society and the natural world: [Mission Reader](#), [Science Mission](#), [Explore Your Backyard](#)

CONNECTION TO NATURE OF SCIENCE

- Scientific investigations use a variety of methods: [Mission Reader](#), [Science Mission](#)
Scientific knowledge is based on empirical evidence: [Mission Reader](#), [Science Mission](#), [STEM Project](#)
Science models, laws, mechanisms and theories explain natural phenomena: [Science Mission](#)
Science is a way of knowing: [Mission Reader](#), [Science Mission](#)
Scientific knowledge assumes an order and consistency in natural systems: [STEM Project](#), [Explore Your Backyard](#)
Science addresses questions about the natural and material world: [Mission Reader](#), [Science Mission](#)

SCIENCE AND ENGINEERING PRACTICES

- Asking questions and defining problems: [Mission Reader](#), [Science Mission](#), [STEM Project](#)
Developing and using models: [STEM Project](#), [Explore Your Backyard](#)
Planning and carrying out investigations: [Science Mission](#)
Analyzing and interpreting data: [Science Mission](#)
Using mathematics and computational thinking: [Science Mission](#)
Constructing explanations and designing solutions: [Mission Reader](#), [Science Mission](#), [STEM Project](#)
Engaging in argument from evidence: [Mission Research](#), [Science Mission](#)
Obtaining, evaluating and communicating information: [Mission Research](#), [Science Mission](#)