

# Grade 7

Adopted 2017

## Earth's Systems

**7-ESS2-1.** Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process. [7-ESS2-1](#)

---

**7-ESS3-1.** Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes. [7-ESS3-1](#)

---

## Structure and Properties of Matter

**7-PS1-1.** Develop models to describe the atomic composition of simple molecules and extended structures. [7-PS1-1](#)

---

**7-PS1-3.** Gather and make sense of information to describe that synthetic materials come from natural resources and impact society. [7-PS1-3](#)

---

**7-PS1-4.** Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed. [7-PS1-4](#)

---

## Matter and Energy in Organisms and Ecosystems

**7-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. [7-LS1-6](#)

---

**7-LS1-7.** Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism. [7-LS1-7](#)

---

**7-LS2-1.** Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem. [7-LS2-1](#)

---

**7-LS2-3.** Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem. [7-LS2-3](#)

---

**7-LS2-4.** Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations. [7-LS2-4](#)

---

Human Impacts	<p><b>7-ESS3-2.</b> Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects. <a href="#">7-ESS3-2</a></p>
Chemical Reactions	<p><b>7-PS1-2.</b> Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred. <a href="#">7-PS1-2</a></p> <hr/> <p><b>7-PS1-5.</b> Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved. <a href="#">7-PS1-5</a></p> <hr/> <p><b>7-PS1-6.</b> Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes. <a href="#">7-PS1-6</a></p>
Interdependent Relationships in Ecosystems	<p><b>7-LS2-2.</b> Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems. <a href="#">7-LS2-2</a></p> <hr/> <p><b>7-LS2-5.</b> Evaluate competing design solutions for maintaining biodiversity and ecosystem services. <a href="#">7-LS2-5</a></p>
History of Earth	<p><b>7-ESS2-2.</b> Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales. <a href="#">7-ESS2-2</a></p> <hr/> <p><b>7-ESS2-3.</b> Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions. <a href="#">7-ESS2-3</a></p>
Engineering, Technology, and Applications of Science	<p><b>7-ETS1-1.</b> Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions. <a href="#">7-ETS1-1</a></p> <hr/> <p><b>7-ETS1-2.</b> Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem. <a href="#">7-ETS1-2</a></p> <hr/> <p><b>7-ETS1-3.</b> Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success. <a href="#">7-ETS1-3</a></p> <hr/> <p><b>7-ETS1-4.</b> Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved. <a href="#">7-ETS1-4</a></p>