

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](#)

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| Human Impacts | <p>7-ESS3-2. Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects. 7-ESS3-2</p> |
| Chemical Reactions | <p>7-PS1-2. Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred. 7-PS1-2</p> |
| | <p>7-PS1-5. 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. 7-PS1-5</p> |
| | <p>7-PS1-6. Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes. 7-PS1-6</p> |
| Interdependent Relationships in Ecosystems | <p>7-LS2-2. Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems. 7-LS2-2</p> |
| | <p>7-LS2-5. Evaluate competing design solutions for maintaining biodiversity and ecosystem services. 7-LS2-5</p> |
| History of Earth | <p>7-ESS2-2. Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales. 7-ESS2-2</p> |
| | <p>7-ESS2-3. Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions. 7-ESS2-3</p> |
| Engineering, Technology, and Applications of Science | <p>7-ETS1-1. 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. 7-ETS1-1</p> |
| | <p>7-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem. 7-ETS1-2</p> |
| | <p>7-ETS1-3. 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. 7-ETS1-3</p> |
| | <p>7-ETS1-4. 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. 7-ETS1-4</p> |