

# Grade 7

Adopted 2021

## Matter and Its Interactions

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

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- 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](#)

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

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- 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](#)

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- 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](#)

## Energy

- 7-PS3-1.** Construct and interpret graphical displays of data to describe the proportional relationships of kinetic energy to the mass of an object and to the speed of an object. [7-PS3-1](#)

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- 7-PS3-2.** Develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system. [7-PS3-2](#)

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- 7-PS3-5.** Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object. [7-PS3-5](#)

## From Molecules to Organisms: Structures and Processes

- 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](#)

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

**Ecosystems:  
Interactions, Energy,  
and Dynamics**

**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

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**7-LS2-2.** Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems. 7-LS2-2

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**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

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**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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**7-LS2-5.** Evaluate competing design solutions for maintaining biodiversity and ecosystem services. 7-LS2-5

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**Earth and Human  
Activity**

**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

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**7-ESS3-3.** Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment. 7-ESS3-3

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**7-ESS3-4.** Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems. 7-ESS3-4

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**7-ESS3-5.** Ask questions to clarify evidence of the factors that have impacted global temperatures over the past century. 7-ESS3-5