

# Grade 8

Adopted 2017

## Physical Science

### Matter and its Interactions

- 8-MS-PS1-1.** Develop models to describe the atomic composition of simple molecules and extended structures. **8-MS-PS1-1**
  - 8-MS-PS1-3.** Gather and make sense of information to describe that synthetic materials come from natural resources and impact society. **8-MS-PS1-3**
  - 8-MS-PS1-6.** Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes. **8-MS-PS1-6**
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### Energy

- 8-MS-PS3-3.** Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer **8-MS-PS3-3**
  - 8-MS-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. **8-MS-PS3-5**
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## Earth and Space Science

### Earth's Place in the Universe

- 8-MS-ESS1-4.** Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's geologic history. **8-MS-ESS1-4**
  - 8-MS-ESS2-1.** Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process. **8-MS-ESS2-1**
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### Earth's Systems

- 8-MS-ESS2-2.** Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales. **8-MS-ESS2-2**
- 8-MS-ESS2-3.** Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and sea floor structures to provide evidence of the past plate motions. **8-MS-ESS2-3**

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## Earth and Human Activity

- 8-MS-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. **8-MS-ESS3-1**
- 8-MS-ESS3-2.** Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects. **8-MS-ESS3-2**
- 8-MS-ESS3-3.** Apply scientific principles to design a method for monitoring and minimizing human impact on the environment. **8-MS-ESS3-3**
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## Life Science

### From Molecules to Organisms: Structures and Processes

- 8-MS-LS1-4.** Construct and use argument(s) based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of survival and successful reproduction of animals and plants respectively. **8-MS-LS1-4**
- 8-MS-LS1-5.** Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms. **8-MS-LS1-5**
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### Heredity: Inheritance and Variation of Traits

- 8-MS-LS3-1.** Develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organism. **8-MS-LS3-1**
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### Biological Evolution: Unity and Diversity

- 8-MS-LS4-1.** Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past. **8-MS-LS4-1**
- 8-MS-LS4-2.** Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships. **8-MS-LS4-2**
- 8-MS-LS4-3.** Analyze displays of pictorial data to compare patterns of similarities in the embryological development across multiple species to identify relationships not evident in the fully formed anatomy. **8-MS-LS4-3**
- 8-MS-LS4-6.** Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations of species over time. **8-MS-LS4-6**