Disciplinary Core Idea

## MS.PS3.D: Energy in Chemical Processes and Everyday Life

The chemical reaction by which plants produce complex food molecules (sugars) requires an energy input (i.e., from sunlight) to occur. In this reaction, carbon dioxide and water combine to form carbon-based organic molecules and release oxygen. (MS-LS1-6)

Disciplinary Core Idea

## MS.PS3.D: Energy in Chemical Processes and Everyday Life

Cellular respiration in plants and animals involve chemical reactions with oxygen that release stored energy. In these processes, complex molecules containing carbon react with oxygen to produce carbon dioxide and other materials. (MS-LS1-7)

Disciplinary Core Idea

## MS.LS1.C: Organization for Matter and Energy Flow in Organisms

Plants, algae (including phytoplankton), and many microorganisms use the energy from light to make sugars (food) from carbon dioxide from the atmosphere and water through the process of photosynthesis, which also releases oxygen. These sugars can be used immediately or stored for growth or later use. (MS-LS1-6)

Disciplinary Core Idea

## MS.LS1.C: Organization for Matter and Energy Flow in Organisms

Within individual organisms, food moves through a series of chemical reactions in which it is broken down and rearranged to form new molecules, to support growth, or to release energy. (MS-LS1-7)

Disciplinary Core Idea

## MS.LS2.A: Interdependent Relationships in Ecosystems

Organisms, and populations of organisms, are dependent on their environmental interactions both with other living things and with nonliving factors. (MS-LS2-1)

Disciplinary Core Idea

## MS.LS2.A: Interdependent Relationships in Ecosystems

In any ecosystem, organisms and populations with similar requirements for food, water, oxygen, or other resources may compete with each other for limited resources, access to which consequently constrains their growth and reproduction. (MS-LS2-1)

Disciplinary Core Idea

## MS.LS2.A: Interdependent Relationships in Ecosystems

Growth of organisms and population increases are limited by access to resources. (MS-LS2-1)

Disciplinary Core Idea

## MS.LS2.B: Cycles of Matter and Energy Transfer in Ecosystems

Food webs are models that demonstrate how matter and energy is transferred between producers, consumers, and decomposers as the three groups interact within an ecosystem. Transfers of matter into and out of the physical environment occur at every level. Decomposers recycle nutrients from dead plant or animal matter back to the soil in terrestrial environments or to the water in aquatic environments. The atoms that make up the organisms in an ecosystem are cycled repeatedly between the living and nonliving parts of the ecosystem. (MS-LS2-3)

Disciplinary Core Idea

## MS.LS2.C: Ecosystem Dynamics, Functioning, and Resilience

Ecosystems are dynamic in nature; their characteristics can vary over time. Disruptions to any physical or biological component of an ecosystem can lead to shifts in all its populations. (MS-LS2-4)

Disciplinary Core Idea

## MS.PS1.A: Structure and Properties of Matter

Each pure substance has characteristic physical and chemical properties (for any bulk quantity under given conditions) that can be used to identify it. (MS-PS1-2)

Disciplinary Core Idea

## MS.PS1.B: Chemical Reactions

Substances react chemically in characteristic ways. In a chemical process, the atoms that make up the original substances are regrouped into different molecules, and these new substances have different properties from those of the reactants. (MS-PS1-2)

Disciplinary Core Idea

## MS.PS1.A: Structure and Properties of Matter

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Disciplinary Core Idea

## MS.PS1.B: Chemical Reactions

Substances react chemically in characteristic ways. In a chemical process, the atoms that make up the original substances are regrouped into different molecules, and these new substances have different properties from those of the reactants. (MS-PS1-3)

Disciplinary Core Idea

## MS.PS1.B: Chemical Reactions

Substances react chemically in characteristic ways. In a chemical process, the atoms that make up the original substances are regrouped into different molecules, and these new substances have different properties from those of the reactants. (MS-PS1-5)

Disciplinary Core Idea

## MS.PS1.B: Chemical Reactions

The total number of each type of atom is conserved, and thus the mass does not change. (MS-PS1-5)

Disciplinary Core Idea

## MS.PS1.B: Chemical Reactions

Some chemical reactions release energy, others store energy. (MS-PS1-6)

Disciplinary Core Idea

## MS.ETS1.B: Developing Possible Solutions

A solution needs to be tested, and then modified on the basis of the test results in order to improve it. (MS-PS1-6)

Disciplinary Core Idea

## MS.ETS1.C: Optimizing the Design Solution

Although one design may not perform the best across all tests, identifying the characteristics of the design that performed the best in each test can provide useful information for the redesign process - that is, some of the characteristics may be incorporated into the new design. (MS-PS1-6)

Disciplinary Core Idea

## MS.ETS1.C: Optimizing the Design Solution

The iterative process of testing the most promising solutions and modifying what is proposed on the basis of the test results leads to greater refinement and ultimately to an optimal solution. (MS-PS1-6)

Disciplinary Core Idea

## MS.ESS3.A: Natural Resources

Humans depend on Earth's land, ocean, atmosphere, and biosphere for many different resources. Minerals, fresh water, and biosphere resources are limited, and many are not renewable or replaceable over human lifetimes. These resources are distributed unevenly around the planet as a result of past geologic processes. (MS-ESS3-1)

Disciplinary Core Idea

## MS.ESS3.C: Human Impacts on Earth Systems

Human activities have significantly altered the biosphere, sometimes damaging or destroying natural habitats and causing the extinction of other species. But changes to Earth's environments can have different impacts (negative and positive) for different living things. (MS-ESS3-3)

**Disciplinary Core Idea**

## MS.ESS3.C: Human Impacts on Earth Systems

Typically as human populations and per-capita consumption of natural resources increase, so do the negative impacts on Earth unless the activities and technologies involved are engineered otherwise. (MS-ESS3-3)

**Disciplinary Core Idea**

## MS.ESS3.C: Human Impacts on Earth Systems

Typically as human populations and per-capita consumption of natural resources increase, so do the negative impacts on Earth unless the activities and technologies involved are engineered otherwise. (MS-ESS3-4)

**Disciplinary Core Idea**

## MS.LS4.C: Adaptation

Adaptation by natural selection acting over generations is one important process by which species change over time in response to changes in environmental conditions. Traits that support successful survival and reproduction in the new environment become more common; those that do not become less common. Thus, the distribution of traits in a population changes. (MS-LS4-6)

Disciplinary Core Idea

## MS.ESS2.A: Earth Materials and Systems

All Earth processes are the result of energy flowing and matter cycling within and among the planet's systems. This energy is derived from the sun and Earth's hot interior. The energy that flows and matter that cycles produce chemical and physical changes in Earth's materials and living organisms. (MS-ESS2-1)

Disciplinary Core Idea

## MS.ESS2.A: Earth Materials and Systems

The planet's systems interact over scales that range from microscopic to global in size, and they operate over fractions of a second to billions of years. These interactions have shaped Earth's history and will determine its future. (MS-ESS2-2)

Disciplinary Core Idea

## MS.ESS2.C: The Roles of Water in Earth's Surface Processes

Water's movements—both on the land and underground—cause weathering and erosion, which change the land's surface features and create underground formations. (MS-ESS2-2)

Disciplinary Core Idea

## MS.LS2.C: Ecosystem Dynamics, Functioning, and Resilience

Biodiversity describes the variety of species found in Earth's terrestrial and oceanic ecosystems. The completeness or integrity of an ecosystem's biodiversity is often used as a measure of its health. (MS-LS2-5)

Disciplinary Core Idea

## MS.LS4.D: Biodiversity and Humans

Changes in biodiversity can influence humans' resources, such as food, energy, and medicines, as well as ecosystem services that humans rely on— for example, water purification and recycling. (MS-LS2-5)

Disciplinary Core Idea

## MS.ETS1.B: Developing Possible Solutions

There are systematic processes for evaluating solutions with respect to how well they meet the criteria and constraints of a problem. (MS-LS2-5)

Performance Expectation

**MS-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.**

**Clarification Statement:** Emphasis is on tracing movement of matter and flow of energy.
**Assessment Boundary:** Assessment does not include the biochemical mechanisms of photosynthesis.

Performance Expectation

**MS-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.**

**Clarification Statement:** Emphasis is on describing that molecules are broken apart and put back together and that in this process, energy is released.
**Assessment Boundary:** Assessment does not include details of the chemical reactions for photosynthesis or respiration.

Performance Expectation

**MS-LS2-1: Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.**

**Clarification Statement:** Emphasis is on cause and effect relationships between resources and growth of individual organisms and the numbers of organisms in ecosystems during periods of abundant and scarce resources.
**Assessment Boundary:** none

Performance Expectation

**MS-LS2-3: Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.**

**Clarification Statement:** Emphasis is on describing the conservation of matter and flow of energy into and out of various ecosystems, and on defining the boundaries of the system.
**Assessment Boundary:** Assessment does not include the use of chemical reactions to describe the processes.

Performance Expectation

**MS-LS2-4: Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.**

**Clarification Statement:** Emphasis is on recognizing patterns in data and making warranted inferences about changes in populations, and on evaluating empirical evidence supporting arguments about changes to ecosystems.
**Assessment Boundary:** none

Performance Expectation

**MS-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.**

**Clarification Statement:** Examples of reactions could include burning sugar or steel wool, fat reacting with sodium hydroxide, and mixing zinc with hydrogen chloride.
**Assessment Boundary:** Assessment is limited to analysis of the following properties: density, melting point, boiling point, solubility, flammability, and odor.

**Performance Expectation**

### MS-PS1-3: Gather and make sense of information to describe that synthetic materials come from natural resources and impact society.

**Clarification Statement:** Emphasis is on natural resources that undergo a chemical process to form the syntheic material. Examples of new materials could include new medicine, foods, and alternative fuels.
**Assessment Boundary:** Assessment is limited to qualitative information.

**Performance Expectation**

### MS-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.

**Clarification Statement:** Emphasis is on law of conservation of matter and on physical models or drawings, including digital forms, that represent atoms.
**Assessment Boundary:** Assessment does not include the use of atomic masses, balancing symbolic equations, or intermolecular forces.

**Performance Expectation**

### MS-PS1-6: Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes.*

**Clarification Statement:** Emphasis is on the design, controlling the transfer of energy to the environment, and modification of a device using factors such as type and concentration of a substance. Examples of designs could involve chemical reactions such as dissolving ammonium chloride or calcium chloride.
**Assessment Boundary:** Assessment is limited to the criteria of amount, time, and temperature of substance in testing the device.

** This performance expectation integrates traditional science content with engineering through a practice or disciplinary code idea.*

Performance Expectation

**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.**

**Clarification Statement:** Emphasis is on how these resources are limited and typically non-renewable, and how their distributions are significantly changing as a result of removal by humans. Examples of uneven distributions of resources as a result of past processes include but are not limited to petroleum (locations of the burial of organic marine sediments and subsequent geologic traps), metal ores (locations of past volcanic and hydrothermal activity associated with subduction zones), and soil (locations of active weathering and/or deposition of rock)
**Assessment Boundary:** none

Performance Expectation

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

**Clarification Statement:** Examples of the design process include examining human environmental impacts, assessing the kinds of solutions that are feasible, and designing and evaluating solutions that could reduce that impact. Examples of human impacts can include water usage (such as the withdrawal of water from streams and aquifers or the construction of dams and levees), land usage (such as urban development, agriculture, or the removal of wetlands), and pollution (such as of the air, water, or land).
**Assessment Boundary:** none

** This performance expectation integrates traditional science content with engineering through a practice or disciplinary code idea.*

Performance Expectation

**MS-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.**

**Clarification Statement:** Examples of evidence include grade-appropriate databases on human populations and the rates of consumption of food and natural resources (such as freshwater, mineral, and energy). Examples of impacts can include changes to the appearance, composition, and structure of Earth’s systems as well as the rates at which they change. The consequences of increases in human populations and consumption of natural resources are described by science, but science does not make the decisions for the actions society takes.
**Assessment Boundary:** none

### Performance Expectation

**MS-LS4-6: Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time.**

**Clarification Statement:** Emphasis is on using mathematical models, probability statements, and proportional reasoning to support explanations of trends in changes to populations over time.
**Assessment Boundary:** Assessment does not include Hardy Weinberg calculations.

### Performance Expectation

**MS-ESS2-1: Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.**

**Clarification Statement:** Emphasis is on the processes of melting, crystallization, weathering, deformation, and sedimentation, which act together to form minerals and rocks through the cycling of Earth's materials.
**Assessment Boundary:** Assessment does not include the identification and naming of minerals.

### Performance Expectation

**MS-ESS2-2: Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.**

**Clarification Statement:** Emphasis is on how processes change Earth's surface at time and spatial scales that can be large (such as slow plate motions or the uplift of large mountain ranges) or small (such as rapid landslides or microscopic geochemical reactions), and how many geoscience processes (such as earthquakes, volcanoes, and meteor impacts) usually behave gradually but are punctuated by catastrophic events. Examples of geoscience processes include surface weathering and deposition by the movements of water, ice, and wind. Emphasis is on geoscience processes that shape local geographic features, where appropriate.
**Assessment Boundary:** none

Performance Expectation

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

**Clarification Statement:** Examples of ecosystem services could include water purification, nutrient recycling, and prevention of soil erosion. Examples of design solution constraints could include scientific, economic, and social considerations.
**Assessment Boundary:** none

** This performance expectation integrates traditional science content with engineering through a practice or disciplinary code idea.*

Science and Engineering Practice

## Developing and Using Models

Modeling in 6–8 builds on K–5 experiences and progresses to developing, using, and revising models to describe, test, and predict more abstract phenomena and design systems.

Develop a model to describe phenomena. (MS-LS2-3)

Science and Engineering Practice

## Developing and Using Models

Modeling in 6–8 builds on K–5 experiences and progresses to developing, using, and revising models to describe, test, and predict more abstract phenomena and design systems.

Develop a model to describe unobservable mechanisms. (MS-LS1-7)

Science and Engineering Practice

## Analyzing and Interpreting Data

Analyzing data in 6–8 builds on K–5 experiences and progresses to extending quantitative analysis to investigations, distinguishing between correlation and causation, and basic statistical techniques of data and error analysis.

Analyze and interpret data to provide evidence for phenomena. (MS-LS2-1)

Science and Engineering Practice

## Constructing Explanations and Designing Solutions

Constructing explanations and designing solutions in 6–8 builds on K–5 experiences and progresses to include constructing explanations and designing solutions supported by multiple sources of evidence consistent with scientific ideas, principles, and theories.

Construct a scientific explanation based on valid and reliable evidence obtained from sources (including the students' own experiments) and the assumption that theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future. (MS-LS1-6)

Science and Engineering Practice

## Engaging in Argument from Evidence

Engaging in argument from evidence in 6–8 builds on K–5 experiences and progresses to constructing a convincing argument that supports or refutes claims for either explanations or solutions about the natural and designed world(s).

Construct an oral and written argument supported by empirical evidence and scientific reasoning to support or refute an explanation or a model for a phenomenon or a solution to a problem. (MS-LS2-4)

Science and Engineering Practice

## Analyzing and Interpreting Data

Analyzing data in 6–8 builds on K–5 experiences and progresses to extending quantitative analysis to investigations, distinguishing between correlation and causation, and basic statistical techniques of data and error analysis.

Analyze and interpret data to determine similarities and differences in findings. (MS-PS1-2)

Science and Engineering Practice

## Obtaining, Evaluating, and Communicating Information

Obtaining, evaluating, and communicating information in 6–8 builds on K–5 experiences and progresses to evaluating the merit and validity of ideas and methods.

Gather, read, and synthesize information from multiple appropriate sources and assess the credibility, accuracy, and possible bias of each publication and methods used, and describe how they are supported or not supported by evidence. (MS-PS1-3)

Science and Engineering Practice

## Developing and Using Models

Modeling in 6–8 builds on K–5 experiences and progresses to developing, using, and revising models to describe, test, and predict more abstract phenomena and design systems.

Develop a model to describe unobservable mechanisms. (MS-PS1-5)

Science and Engineering Practice

## Constructing Explanations and Designing Solutions

Constructing explanations and designing solutions in 6–8 builds on K–5 experiences and progresses to include constructing explanations and designing solutions supported by multiple sources of evidence consistent with scientific ideas, principles, and theories.

Undertake a design project, engaging in the design cycle, to construct and/or implement a solution that meets specific design criteria and constraints. (MS-PS1-6)

Science and Engineering Practice

## Constructing Explanations and Designing Solutions

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Science and Engineering Practice

## Constructing Explanations and Designing Solutions

Constructing explanations and designing solutions in 6–8 builds on K–5 experiences and progresses to include constructing explanations and designing solutions supported by multiple sources of evidence consistent with scientific ideas, principles, and theories.

Apply scientific ideas or principles to design an object, tool, process or system. (MS-ESS3-3)

Science and Engineering Practice

## Engaging in Argument from Evidence

Engaging in argument from evidence in 6–8 builds on K–5 experiences and progresses to constructing a convincing argument that supports or refutes claims for either explanations or solutions about the natural and designed world(s).

Construct an oral and written argument supported by empirical evidence and scientific reasoning to support or refute an explanation or a model for a phenomenon or a solution to a problem. (MS-ESS3-4)

Science and Engineering Practice

## Using Mathematics and Computational Thinking

Mathematical and computational thinking at the 6–8 level builds on K–5 experiences and progresses to identifying patterns in large data sets and using mathematical concepts to support explanations and arguments.

Use mathematical representations to support scientific conclusions and design solutions. (MS-LS4-6)

Science and Engineering Practice

## Developing and Using Models

Modeling in 6–8 builds on K–5 experiences and progresses to developing, using, and revising models to describe, test, and predict more abstract phenomena and design systems.

Develop and use a model to describe phenomena. (MS-ESS2-1)

Science and Engineering Practice

## Constructing Explanations and Designing Solutions

Constructing explanations and designing solutions in 6–8 builds on K–5 experiences and progresses to include constructing explanations and designing solutions supported by multiple sources of evidence consistent with scientific ideas, principles, and theories.

Construct a scientific explanation based on valid and reliable evidence obtained from sources (including the students' own experiments) and the assumption that theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future. (MS-ESS2-2)

Science and Engineering Practice

## Engaging in Argument from Evidence

Engaging in argument from evidence in 6–8 builds on K–5 experiences and progresses to constructing a convincing argument that supports or refutes claims for either explanations or solutions about the natural and designed world(s).

Evaluate competing design solutions based on jointly developed and agreed-upon design criteria. (MS-LS2-5)

Crosscutting Concept

## Cause and Effect

Cause and effect relationships may be used to predict phenomena in natural or designed systems. (MS-LS2-1)

Crosscutting Concept

## Energy and Matter

Matter is conserved because atoms are conserved in physical and chemical processes. (MS-LS1-7)

Crosscutting Concept

## Energy and Matter

Within a natural system, the transfer of energy drives the motion and/or cycling of matter. (MS-LS1-6)

Crosscutting Concept

## Energy and Matter

The transfer of energy can be tracked as energy flows through a natural system. (MS-LS2-3)

Crosscutting Concept

## Stability and Change

Small changes in one part of a system might cause large changes in another part. (MS-LS2-4)

Crosscutting Concept

## Patterns

Macroscopic patterns are related to the nature of microscopic and atomic-level structure. (MS-PS1-2)

Crosscutting Concept

## Structure and Function

Structures can be designed to serve particular functions by taking into account properties of different materials, and how materials can be shaped and used. (MS-PS1-3)

Crosscutting Concept

## Energy and Matter

Matter is conserved because atoms are conserved in physical and chemical processes. (MS-PS1-5)

Crosscutting Concept

## Energy and Matter

The transfer of energy can be tracked as energy flows through a designed or natural system. (MS-PS1-6)

Crosscutting Concept

## Cause and Effect

Cause and effect relationships may be used to predict phenomena in natural or designed systems. (MS-ESS3-1)

Crosscutting Concept

## Cause and Effect

Relationships can be classified as causal or correlational, and correlation does not necessarily imply causation. (MS-ESS3-3)

Crosscutting Concept

## Cause and Effect

Cause and effect relationships may be used to predict phenomena in natural or designed systems. (MS-ESS3-4)

Crosscutting Concept

## Cause and Effect

Phenomena may have more than one cause, and some cause and effect relationships in systems can only be described using probability. (MS-LS4-6)

Crosscutting Concept

## Stability and Change

Explanations of stability and change in natural or designed systems can be constructed by examining the changes over time and processes at different scales, including the atomic scale. (MS-ESS2-1)

Crosscutting Concept

## Scale, Proportion, and Quantity

Time, space, and energy phenomena can be observed at various scales using models to study systems that are too large or too small. (MS-ESS2-2)

Crosscutting Concept

## Stability and Change

Small changes in one part of a system might cause large changes in another part. (MS-LS2-5)

Connection to Nature of Science

## Science Knowledge Is Based on Empirical Evidence

Science knowledge is based upon logical connections between evidence and explanations. (MS-LS1-6)

Connection to Nature of Science

## Science Knowledge Is Based on Empirical Evidence

Science disciplines share common rules of obtaining and evaluating empirical evidence. (MS-LS2-4)

Connection to Engineering, Technology, and Applications of Science

## Science Knowledge Is Based on Empirical Evidence

Science knowledge is based upon logical and conceptual connections between evidence and explanations. (MS-PS1-2)

Connection to Engineering, Technology, and Applications of Science

### Science Models, Laws, Mechanisms, and Theories Explain Natural Phenomena

Laws are regularities or mathematical descriptions of natural phenomena. (MS-PS1-5)

Connection to Engineering, Technology, and Applications of Science

### Science Addresses Questions About the Natural and Material World

Scientific knowledge can describe the consequences of actions but does not necessarily prescribe the decisions that society takes. (MS-ESS3-4)

Connection to Engineering, Technology, and Applications of Science

### Science Addresses Questions About the Natural and Material World

Scientific knowledge can describe the consequences of actions but does not necessarily prescribe the decisions that society takes. (MS-LS2-5)

Connection to Engineering, Technology, and Applications of Science

## Influence of Science, Engineering, and Technology on Society and the Natural World

The uses of technologies and any limitations on their use are driven by individual or societal needs, desires, and values; by the findings of scientific research; and by differences in such factors as climate, natural resources, and economic conditions. Thus technology use varies from region to region and over time. (MS-PS1-3)

Connection to Engineering, Technology, and Applications of Science

## Interdependence of Science, Engineering, and Technology

Engineering advances have led to important discoveries in virtually every field of science and scientific discoveries have led to the development of entire industries and engineered systems. (MS-PS1-3)

Connection to Engineering, Technology, and Applications of Science

## Influence of Science, Engineering, and Technology on Society and the Natural World

All human activity draws on natural resources and has both short and long-term consequences, positive as well as negative, for the health of people and the natural environment. (MS-ESS3-1)

Connection to Engineering, Technology, and Applications of Science

### Influence of Science, Engineering, and Technology on Society and the Natural World

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Connection to Engineering, Technology, and Applications of Science

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Common Core State Standards for ELA/Literacy

## Reading Informational Text

### RI.8.8 - Integration of Knowledge and Ideas

Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient; recognize when irrelevant evidence is introduced. (MS-LS2-4)

Common Core State Standards for ELA/Literacy

## Reading in Science

### RST.6-8.1 - Key Ideas and Details

Cite specific textual evidence to support analysis of science and technical texts. (MS-LS1-6), (MS-LS2-1), (MS-LS2-4)

Common Core State Standards for ELA/Literacy

## Reading in Science

### RST.6-8.2 - Key Ideas and Details

Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions. (MS-LS1-6)

Common Core State Standards for ELA/Literacy

## Reading in Science

### RST.6-8.7 - Integration of Knowledge and Ideas

Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table). (MS-LS2-1)

Common Core State Standards for ELA/Literacy

## Speaking & Listening

### SL.8.5 - Presentation of Knowledge and Ideas

Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest. (MS-LS1-7), (MS-LS2-3)

Common Core State Standards for ELA/Literacy

## Writing in Science

### WHST.6-8.1 - Text Types and Purposes

Cite specific textual evidence to support analysis of science and technical texts. (MS-LS2-4)

## Common Core State Standards for ELA/Literacy

### Writing in Science

### WHST.6-8.2 - Text Types and Purposes

Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. (MS-LS1-6)

## Common Core State Standards for ELA/Literacy

### Writing in Science

### WHST.6-8.9 - Research to Build and Present Knowledge

Draw evidence from informational texts to support analysis reflection, and research. (MS-LS1-6)

## Common Core State Standards for Mathematics

### Expressions & Equations

### 6.EE.C.9 - Represent and analyze quantitative relationships between dependent and independent variables.

Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. (MS-LS1-6), (MS-LS2-3)