

TITLE	MA STANDARDS ADDRESSED	GR LEVEL	LEXILE LEVEL	BOOK SUMMARY
A Chemist In the Kitchen ISBN 0022859462 6 PK ISBN 0022866175	Physical # 1	L	680	<i>A Chemist in the Kitchen</i> defines the terms matter and chemistry, discusses elements, compounds, and mixtures, and gives procedures for several experiments that can be carried out in a kitchen.
A World of Microorganisms ISBN 0022846840 6 PK ISBN 0022864709	Earth/Space # 4, Life # 1, Life # 6, Life # 10, Life # 11	S	720	<i>A World of Microorganisms</i> explains that microorganisms are found almost everywhere, including in and on the human body, in water, and in the soil. This book also explains how vaccines can protect against disease.
Acids and Bases ISBN 0022859020 6 PK ISBN 0022866191	Life # 7, Physical # 1	T	570	<i>Acids and Bases</i> describes the properties and uses of acids and bases and identifies the harmful effects of acid rain. The pH scale and neutralization are defined and described.
All About Elements ISBN 002285889X 6 PK ISBN 0022866140	Physical # 1, Physical # 2	M	500	<i>All About Elements</i> defines the terms matter and element, discusses historical research of elements, explains the structure of the atom, and the development of the periodic table.
Animal Senses ISBN 0022858989 6 PK ISBN 002286606X	Life # 6, Life # 8, Life # 9	T	670	<i>Animal Senses</i> discusses the five commonly recognized senses and ways in which animals use these senses. It also describes other senses possessed by some animals such as the ability to detect electricity or heat.

* - Also available in an English Language Learner version

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Barrier Islands * ISBN 0022858938 6 PK ISBN 0022866116	Earth/Space # 12	R	710	Barrier Islands describes the characteristics of barrier islands and the impact that erosion and hurricanes can have on barrier islands.
Caves: A World of Their Own * ISBN 0022846794 6 PK ISBN 0022864660	Earth/Space # 12, Life # 6	Q	750	Caves: A World of Their Own describes how caves are formed and identifies adaptations of living things found in caves. An interview with a cave explorer allows students to learn more about careers in science.
Constellations ISBN 0022859012 6 PK ISBN 0022866132	Earth/Space # 14	T	530	Constellations explains that ancient Greeks were some of the first astronomers, identifies major constellations, and explains how the appearance of the night sky changes over the seasons. A star map is illustrated and explained.
Desert Animals and Plants ISBN 0022846786 6 PK ISBN 0022864652	Life # 2, Life # 6, Life # 7, Life # 8, Life # 10	O	650	Desert Animals and Plants describes the adaptations of desert organisms such as kangaroo rats, horned lizards, pupfish, jack rabbits, saguaro cacti, and sagebrush. An explanation of how each of these organisms survives in an environment with very little water is given, and specific adaptations are pictured.
Diamonds ISBN 0022846859 6 PK ISBN 0022864717	Earth/Space # 12, Physical # 1, Tech/Eng # 1.1	O	700	Diamonds discusses gemstones and minerals, identifies properties of diamonds, describes how diamonds are formed, and describes some uses of diamonds. Chapter 3 includes a labeled diagram of Earth's layers.
El Nino ISBN 0022846948 6 PK ISBN 0022864792	Earth/Space # 6, Earth/Space # 8, Earth/Space # 12, Life # 7	S	720	El Nino describes the weather patterns associated with El Nino and La Nina and identifies the impact of global warming on these weather patterns. This book also discusses technologies used by scientists to detect coming El Nino events.

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Fossils and Fossil Fuels ISBN 0022859004 6 PK ISBN 0022866094	Earth/Space # 3, Earth/Space # 12, Physical # 4, Physical # 5	T	620	Fossils and Fossil Fuels explains how fossils form and discusses what can be learned by studying fossils. It also describes the formation of fossil fuels, the detrimental effects of fossil fuel use, and possible alternatives to fossil fuel.
Glaciers ISBN 0022846883 6 PK ISBN 0022864741	Earth/Space # 12, Life # 7	O	680	Glaciers describes different kinds of glaciers, how glaciers move, how glaciers change the land, the characteristics of an ice age, and the impact of global warming on glaciers.
Gold! ISBN 0022861726 6 PK ISBN 0022866167	Physical # 4, Tech/Eng # 1.1	T	730	Gold! describes the properties of gold, methods of mining for gold, reasons why gold is so valuable, and the impact of the Gold Rush on California's history. Uses of gold in medicine, telescopes, computers, telephones, and televisions are discussed
Hidden Food Webs * ISBN 0022846832 6 PK ISBN 0022864695	Earth/Space # 4, Life # 1, Life # 11, Tech/Eng # 2.4	Q	710	Hidden Food Webs describes food webs with an emphasis on the role of microorganisms in a variety of food webs. The terms producer, consumer, and decomposer are defined.
How Can We Save Them? ISBN 0022858997 6 PK ISBN 0022866086	Life # 7, Life # 8, Life # 10	U	740	How Can We Save Them? discusses the diversity of living things on Earth and identifies reasons why species become endangered. The impact of extinctions on ecosystems and strategies for saving endangered species are also discussed. Chapter 7 highlights actions that individuals can take to help save endangered plants and animals.
It's Electric * ISBN 0022846964 6 PK ISBN 0022864822	Physical # 4, Physical # 5, Physical # 6, Physical # 8	Q	710	It's Electric describes the role of electrons in electricity, how electricity is delivered to homes, ways that consumption of electricity can be reduced, and scientists who have explored electricity. Alternative methods of producing electricity are discussed in chapter 5.

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Levers in Our Lives ISBN 0022859039 6 PK ISBN 002286623X	Tech/Eng # 1.3, Tech/Eng # 2.4	T	520	<i>Levers in Our Lives</i> describes how levers are used, discusses the three classes of levers, and identifies everyday examples of levers. The use of levers throughout history is described, including the role levers may have played in the building of the pyramids.
Lights and White Nights * ISBN 0022858946 6 PK ISBN 0022866124	Earth/Space # 14	Q	620	<i>Lights and White Nights</i> explains why Earth has seasons. It also explains how day and night at the poles are impacted by Earth's tilt on its axis, and explains how the Northern lights form.
Machines * ISBN 0022858970 6 PK ISBN 0022866221	Tech/Eng # 1.3	R	680	<i>Machines</i> describes the six types of simple machines (inclined plane, wedge, screw, lever, wheel and axle, pulley) and ways that simple machines are combined to form compound machines. Examples of compound machines shown in the book include can openers, escalators, and bicycles.
Maglev Trains ISBN 0022847014 6 PK ISBN 0022864865	Physical # 8, Physical # 9	S	680	<i>Maglev Trains</i> explains that maglev trains work by utilizing magnetic forces. It also describes advantages and disadvantages of this technology.
Partners in Nature ISBN 0022846816 6 PK ISBN 0022864679	Life # 6, Life # 8, Life # 11	T	700	<i>Partners in Nature</i> describes commensalism, parasitism, mutualism, and symbiosis. Examples of each type of relationship are described, for example, commensalism is illustrated by the relationship between remoras and sharks.
Rain Forests, Coral Reefs, and Deserts ISBN 0022859411 6 PK ISBN 0022866078	Life # 7, Life # 10, Life # 11	L	700	<i>Rain Forests, Coral Reefs, and Deserts</i> describes the food chains in these ecosystems and identifies threats to these ecosystems. ways that ecosystems can be saved are also discussed.

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Rocks * ISBN 0022846867 6 PK ISBN 0022864725	Earth/Space # 1, Earth/Space # 3, Earth/Space # 12	Q	710	Rocks describes how rocks form, how they change as they move through the rock cycle, how fossils form, and careers that involve studying rocks. Igneous, metamorphic, and sedimentary rocks are described.
Scientists and Cells ISBN 0022858865 6 PK ISBN 0022866027	Life # 1	L	510	Scientists and Cells describes the invention of the microscope, the development of cell theory and germ theory, and modern research involving cells. This book emphasizes the cumulative nature of scientific discovery.
Sources of Energy ISBN 0022858903 6 PK ISBN 0022866213	Physical # 4, Physical # 5	N	560	Sources of Energy identifies common energy sources, such as moving water and fossil fuels and describes alternative energy sources, such as solar energy and wind energy. Diagrams show how coal is used to make electricity in power plants and how hydroelectric power plants produces electricity.
The GALILEO Mission to Jupiter ISBN 002285942X 6 PK ISBN 002286993X	Earth/Space # 13	K	800	The Galileo Mission to Jupiter describes the discoveries made by the Galileo spacecraft and highlights the role of technology in advancing science.
The Grand Canyon ISBN 0022846913 6 PK ISBN 0022864768	Earth/Space # 5, Earth/Space # 6, Earth/Space # 12	S	750	The Grand Canyon explains how the Grand Canyon was formed, illustrates some of the features of the Grand Canyon, and describes some of the fossils that can be found in the Grand Canyon.
The Story of Alloys * ISBN 0022858962 6 PK ISBN 0022866183	Physical # 1, Tech/Eng # 1.1	R	590	The Story of Alloys defines the term alloy, identifies the roles alloys have played in cultures throughout history, and discusses potential future uses of alloys.

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Thomas Edison ISBN 0022846956 6 PK ISBN 0022864814	Physical # 5, Physical # 6, Physical # 7	O	700	<i>Thomas Edison</i> describes his life and inventions, such as the phonograph and the kinetograph. The cumulative nature of the development of technology is described.
What is a Platypus? * ISBN 0022846891 6 PK ISBN 002286475X	Life # 1, Life # 6, Life # 8	R	580	<i>What On Earth is a Platypus?</i> explains how scientists determined how to classify the platypus. It explains that scientific knowledge often develops over time and is the result of the work of many people.
What is Happening to the Beach? * ISBN 0022858911 6 PK ISBN 0022866035	Earth/Space # 12, Life # 7	Q	700	<i>What is Happening to the Beach?</i> describes how erosion changes beaches and ways that people can prevent beaches from eroding too quickly.
What's New on Earth? * ISBN 002285892X 6 PK ISBN 0022866051	Life # 1, Life # 6, Life # 7, Life # 8	R	650	<i>What's New On Earth?</i> describes some recently-discovered species and explains that the majority of Earth's species have yet to be discovered.
What's the Matter? * ISBN 0022858954 6 PK ISBN 0022866159	Physical # 1, Physical # 2, Tech/Eng # 1.1	R	600	<i>What's the Matter?</i> discusses matter, properties of matter, and states of matter in the context of a wide variety of sculptures.
Which Is Which? ISBN 0022858873 6 PK ISBN 0022866043	Life # 1	L	460	<i>Which is Which?</i> explains how animals are classified and identifies differences between pairs of animals that are commonly confused.
Why Does It Rain? ISBN 0022858881 6 PK ISBN 0022866108	Earth/Space # 10, Earth/Space # 11, Physical # 2, Physical # 3	L	500	<i>Why Does It Rain?</i> Describes the distribution of saltwater and freshwater on Earth, describes the water cycle, and discusses the processes of evaporation and condensation. The three states of water are illustrated and described.

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Massachusetts Science and Technology/Engineering Curriculum Framework

Standard**Earth and Space Science, Grade 4****Rocks and Their Properties**

- Earth/Space # 1 Give a simple explanation of what a mineral is and some examples, e.g., quartz, mica.
- Earth/Space # 2 Identify the physical properties of minerals (hardness, color, luster, cleavage, and streak), and explain how minerals can be tested for these different physical properties.
- Earth/Space # 3 Identify the three categories of rocks (metamorphic, igneous, and sedimentary) based on how they are formed, and explain the natural and physical processes that create these rocks.

Soil

- Earth/Space # 4 Explain and give examples of the ways in which soil is formed (the weathering of rock by water and wind and from the decomposition of plant and animal remains).
- Earth/Space # 5 Recognize and discuss the different properties of soil, including color, texture (size of particles), the ability to retain water, and the ability to support the growth of plants.

Weather

- Earth/Space # 6 Explain how air temperature, moisture, wind speed and direction, and precipitation make up the weather in a particular place and time.
- Earth/Space # 7 Distinguish among the various forms of precipitation (rain, snow, sleet, and hail), making connections to the weather in a particular place and time.
- Earth/Space # 8 Describe how global patterns such as the jet stream and water currents influence local weather in measurable terms such as temperature, wind direction and speed, and precipitation.
- Earth/Space # 9 Differentiate between weather and climate.

The Water Cycle

- Earth/Space # 10 Describe how water on earth cycles in different forms and in different locations, including underground and in the atmosphere.
- Earth/Space # 11 Give examples of how the cycling of water, both in and out of the atmosphere, has an effect on climate.

Earth's History

- Earth/Space # 12 Give examples of how the surface of the earth changes due to slow processes such as erosion and weathering, and rapid processes such as landslides, volcanic eruptions, and earthquakes.

The Earth in the Solar System

- Earth/Space # 13 Recognize that the earth is part of a system called the “solar system” that includes the sun (a star), planets, and many moons. The earth is the third planet from the sun in our solar system.
- Earth/Space # 14 Recognize that the earth revolves around (orbits) the sun in a year’s time and that the earth rotates on its axis once approximately every 24 hours. Make connections between the rotation of the earth and day/night, and the apparent movement of the sun, moon, and stars across the sky.
- Earth/Space # 15 Describe the changes that occur in the observable shape of the moon over the course of a month.

Standard

Life Science (Biology), Grade 4

Characteristics of Plants and Animals

- Life # 1 Classify plants and animals according to the physical characteristics that they share.

Structures and Functions

- Life # 2 Identify the structures in plants (leaves, roots, flowers, stem, bark, wood) that are responsible for food production, support, water transport, reproduction, growth, and protection.
- Life # 3 Recognize that plants and animals go through predictable life cycles that include birth, growth, development, reproduction, and death.
- Life # 4 Describe the major stages that characterize the life cycle of the frog and butterfly as they go through metamorphosis.

Life # 5 Differentiate between observed characteristics of plants and animals that are fully inherited (e.g., color of flower, shape of leaves, color of eyes, number of appendages) and characteristics that are affected by the climate or environment (e.g., browning of leaves due to too much sun, language spoken).

Adaptations of Living Things

Life # 6 Give examples of how inherited characteristics may change over time as adaptations to changes in the environment that enable organisms to survive, e.g., shape of beak or feet, placement of eyes on head, length of neck, shape of teeth, color.

Life # 7 Give examples of how changes in the environment (drought, cold) have caused some plants and animals to die or move to new locations (migration).

Life # 8 Describe how organisms meet some of their needs in an environment by using behaviors (patterns of activities) in response to information (stimuli) received from the environment. Recognize that some animal behaviors are instinctive (e.g., turtles burying their eggs), and others are learned (e.g., humans building fires for warmth, etc.).

Life # 9 Recognize plant behaviors, such as the way seedlings' stems grow toward light and their roots grow downward in response to gravity. Recognize that many plants and animals can survive harsh environments because of seasonal behaviors, e.g., in winter, some trees shed leaves, some animals hibernate, and other animals migrate.

Life # 10 Give examples of how organisms can cause changes in their environment to ensure survival. Explain how some of these changes may affect the ecosystem.

Energy and Living Things

Life # 11 Describe how energy derived from the sun is used by plants to produce sugars (photosynthesis) and is transferred within a food chain from producers (plants) to consumers to decomposers.

Standard

Physical Sciences (Chemistry and Physics), Grade 4

Properties of Objects and Materials

Physical # 1 Differentiate between properties of objects (e.g., size, shape, weight) and properties of materials (e.g., color, texture, hardness).

States of Matter

Physical # 2 Compare and contrast solids, liquids, and gases based on the basic properties of each of these states of matter.

Physical # 3 Describe how water can be changed from one state to another by adding or taking away heat.

Forms of Energy

Physical # 4 Identify the basic forms of energy (light, sound, heat, electrical, and magnetic). Recognize that energy is the ability to cause motion or create change.

Physical # 5 Give examples of how energy can be transferred from one form to another.

Electrical Energy

Physical # 6 Recognize that electricity in circuits requires a complete loop through which an electrical current can pass, and that electricity can produce light, heat, and sound.

Physical # 7 Identify and classify objects and materials that conduct electricity and objects and materials that are insulators of electricity.

Physical # 8 Explain how electromagnets can be made, and give examples of how they can be used.

Magnetic Energy

Physical # 9 Recognize that magnets have poles that repel and attract each other.

Physical # 10 Identify and classify objects and materials that a magnet will attract and objects and materials that a magnet will not attract.

Sound Energy

Physical # 11 Recognize that sound is produced by vibrating objects and requires a medium through which to travel. Relate the rate of vibration to the pitch of the sound.

Light Energy

Physical # 12 Recognize that light travels in a straight line until it strikes an object or travels from one medium to another, and that light can be reflected, refracted, and absorbed.

Standard

Technology/Engineering, Grade 4

Materials and Tools

- Tech/Eng # 1.1 Identify materials used to accomplish a design task based on a specific property, e.g., strength, hardness, and flexibility.
- Tech/Eng # 1.2 Identify and explain the appropriate materials and tools (e.g., hammer, screwdriver, pliers, tape measure, screws, nails, and other mechanical fasteners) to construct a given prototype safely.
- Tech/Eng # 1.3 Identify and explain the difference between simple and complex machines, e.g., hand can opener that includes multiple gears, wheel, wedge, gear, and lever.

Engineering Design

- Tech/Eng # 2.1 Identify a problem that reflects the need for shelter, storage, or convenience.
- Tech/Eng # 2.2 Describe different ways in which a problem can be represented, e.g., sketches, diagrams, graphic organizers, and lists.
- Tech/Eng # 2.3 Identify relevant design features (e.g., size, shape, weight) for building a prototype of a solution to a given problem.
- Tech/Eng # 2.4 Compare natural systems with mechanical systems that are designed to serve similar purposes, e.g., a bird's wings as compared to an airplane's wings.