

TITLE	MA STANDARDS ADDRESSED	GR LEVEL	LEXILE LEVEL	BOOK SUMMARY
Air Pollution ISBN 0022847170 6 PK ISBN 0022865039	Life # 10, Life # 11	V	800	Causes of air pollution and the impact of air pollution on the atmosphere are described in <i>Air Pollution</i> . Also covered are the ozone layer, global warming, and strategies to prevent air pollution.
Alloys: Metals in the Mix * ISBN 002284726X 6 PK ISBN 0022865128	Physical # 1, Physical # 7	U	840	<i>Alloys: Metals In the Mix</i> introduces the definition of the term <i>alloy</i> and provides an in-depth look at the history of alloys. Technological applications of alloys and possible future uses of alloys are also described.
Amusement Park Rides ISBN 0022859152 6 PK ISBN 0022866361	Physical # 4	W	680	<i>Amusement Park Rides</i> uses descriptions of rides to clarify the relationship between forces (gravity, friction, etc.) and motion (Newton's Laws). Careers that use science and technological design are addressed in Chapter 8, Meet a Roller Coaster Designer.
Animal Adaptations ISBN 0022847111 6 PK ISBN 0022864962	Life # 6, Life # 8, Life # 9, Life # 11, Physical # 11, Tech/Eng # 2.4	V	820	<i>Animal Adaptations</i> describes adaptations that help animals find food, find mates, move, and stay safe. The relationship between adaptations and specific environments is also described.
Can Cells Grow Too Much? ISBN 0022847049 6 PK ISBN 002286489X	Life # 5	V	770	<i>Can Cells Grow Too Much?</i> Gives a brief description of cell structure, chromosomes, and DNA. Normal mitosis and its function in the body is contrasted with uncontrolled cell division. Cancer, metastasis, causes of cancer, cancer prevention, and medical technologies used to treat cancer are also discussed.
Carbon All Around * ISBN 0022847235 6 PK ISBN 002286508X	Physical # 1, Tech/Eng # 1.1	U	870	<i>Carbon All Around</i> begins with definitions of the terms element and matter and introduces carbon as one of the most plentiful elements on Earth. Uses of carbon, the carbon cycle, carbon dating, fossil fuels, and other technologies utilizing carbon are also discussed.

* - Also available in an English Language Learner version

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Cells ISBN 0022847022 6 PK ISBN 0022864873	No correlation	S		Cells discusses the structure and function of cells and organelles and describes levels of organization in organisms. Chapter 4 gives an in-depth look at the history of cell research, and Chapter 5 describes applications of cell research.
Costa Rican Rain Forests ISBN 0022847081 6 PK ISBN 0022864946	Earth/Space # 4, Earth/Space # 5, Life # 2, Life # 3, Life # 4, Life # 6, Life # 8	S	800	Costa Rican Rain Forests explores relationships between living things in the Costa Rican rain forest. Adaptations of plants and animals are discussed. Costa Rica's commitment to conservation is highlighted in Chapter 1.
Discovering the Elements ISBN 0022847227 6 PK ISBN 0022865071	Physical # 1	T	730	Discovering the Elements describes the discovery and uses of some common elements. It also explains the organization of the periodic table, and the contributions of scientists who discovered and studied elements.
Earth's Heat ISBN 0022861750 6 PK ISBN 0022866310	Earth/Space # 12	W	800	In Earth's Heat , the structure of Earth is described and the relationship of Earth's internal energy to plate tectonics is identified. This book also explains how earthquakes and volcanoes are related to plate motion.
Earth's Oceans ISBN 0022861742 6 PK ISBN 0022866272	Earth/Space # 8, Earth/Space # 10, Life # 6, Life # 8, Life # 9, Life # 11	W	820	Earth's Oceans provides a description of the physical and ecological features of oceans. The distinguishing characteristics of the Pacific, Atlantic, Indian, and Arctic Oceans are identified. The book also includes an in-depth description of coral reef ecosystems.
Earth's Water ISBN 0022861769 6 PK ISBN 0022864997	Earth/Space # 10, Earth/Space # 11, Life # 7, Life # 10, Physical # 5	S	860	Earth's Water describes ways that water is used on Earth, as well as water pollution and water treatment. The water cycle is diagramed, and the processes of evaporation, condensation, and precipitation are described.

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Genetics ISBN 0022859136 6 PK ISBN 0022866256	Life # 5	W	780	Genetics includes a description of Mendel's work and the history of genetics. It also covers cells and DNA, as well as applications of DNA technology.
Global Weather ISBN 0022859144 6 PK ISBN 0022866337	Earth/Space # 6, Earth/Space # 7, Earth/Space # 8, Earth/Space # 10, Earth/Space # 11, Life # 7	W	670	Global Weather identifies the factors that make up weather, the role of the water cycle in weather, forms of severe weather, and human impact on weather. It also includes information about careers in meteorology.
Hurricanes and Tornadoes ISBN 0022847154 6 PK ISBN 0022865012	Earth/Space # 6, Earth/Space # 8	T	830	Hurricanes and Tornadoes explains how hurricanes and tornadoes form, locations where they commonly occur, and types of damage they cause.
Life Goes On * ISBN 0022847219 6 PK ISBN 0022865063	Life # 3, Life # 5, Life # 6, Life # 8	U	690	Sexual and asexual reproduction are compared and contrasted in Life Goes On . This book also discusses diversity among individuals, and adaptations that help young organisms survive in different environments.
Life on a Space Station ISBN 0022847219 6 PK ISBN 0022865063	Earth/Space # 13	V	900	Students explore everyday life on a space station, the history of the space station, and careers in space exploration in Life On a Space Station .
Looking to the Sky ISBN 0022847189 6 PK ISBN 0022865047	Earth/Space # 13, Earth/Space # 14	T	820	Looking to the Sky highlights the cumulative nature of scientific knowledge, discusses the development of the sciences of astronomy and rocketry, and describes the future of space exploration.

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Magnetism ISBN 0022859071 6 PK ISBN 0022866388	Physical # 6, Physical # 8, Physical # 9, Physical # 10, Physical # 11	P	620	The force of magnetism and Earth's magnetic field are described in <i>Magnetism</i> . This book also explains the relationship between magnetism and electricity and applications of electromagnets and motors.
Mission: Green Earth * ISBN 0022859101 6 PK ISBN 0022866329	Life # 7, Life # 10, Life # 11, Physical # 5	U	650	The term natural resources is defined in <i>Mission: Green Earth</i> . This book also describes how Earth's resources can be used in sustainable ways and describes the negative impact of fossil fuel use and clear cutting.
Mixtures and Solutions ISBN 0022859373 6 PK ISBN 0022866345	Physical # 1, Physical # 3	Q	590	In <i>Mixtures and Solutions</i> students are introduced to the differences between mixtures and solutions and methods that can be used to separate mixtures and solutions. This book also describes the difference between chemical change and physical change.
Motion and Energy at Play * ISBN 002285911X 6 PK ISBN 002286637X	Physical # 4, Tech/Eng # 1.3	T	800	<i>Motion and Energy at Play</i> explains how the science of physics is applied in bicycling, skateboarding, and inline skating. Simple machines are discussed, and the force of friction is defined and discussed.
Nature's Partners ISBN 0022859047 6 PK ISBN 0022866264	Life # 6, Life # 8	P	530	<i>Nature's Partners</i> describes and gives examples of symbiosis, mutualism, and commensalism. Examples of each type of relationship are pictured and described. For example, the relationship between sea anemone and clownfish is used to illustrate mutualism.
One-Celled Organisms * ISBN 0022847030 6 PK ISBN 0022864881	Life # 1, Life # 11	U	730	<i>One-Celled Organisms</i> discusses cells and microscopes. It also explores classification and gives a description of various types of one-celled organisms, including Monera, Protists, and Fungi.

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Periodic Table Families ISBN 0022847243 6 PK ISBN 0022865098	Physical # 1, Physical # 2, Physical # 3	V	840	Periodic Table Families defines the term matter and describes the structure of the atom. It also explains how the periodic table was developed, describes states of matter, and discusses the properties of metals, nonmetals, and gases.
Plastics ISBN 0022847278 6 PK ISBN 0022865136	Physical # 1, Physical # 3, Tech/Eng # 1.1	W	890	Plastics explains how various plastics are made, describes uses and properties of different types of plastics, and emphasizes the importance of recycling plastics.
Seeds and Spores ISBN 0022861734 6 PK ISBN 0022864938	Life # 2, Life # 3, Life # 11	O	770	Seeds and Spores explains how plants are classified based on their method of reproduction, describes the life cycle of plants, and identifies the roles played by animals in the fertilization of plants.
Shake, Rattle, and Explode * ISBN 0022859098 6 PK ISBN 0022866299	Earth/Space # 12	U	660	Volcanoes are the focus of Shake, Rattle, and Explode! Earthquakes, tsunamis, and plate tectonics are also discussed. Significant historical eruptions, such as Krakatau, are described and the December 24, 2004 tsunami is discussed.
Sir Isaac Newton ISBN 0022859063 6 PK ISBN 0022866353	No correlation	P	510	Sir Isaac Newton describes Newton's life, his major discoveries, and Newton's three laws of motion. Newton's work on the topic of gravity is also discussed. Each of the three laws of motion is clarified with photos, and experiments to demonstrate the laws of motion are included.
Sonar, Radar, and Lasers ISBN 0022859160 6 PK ISBN 0022863418	Physical # 4, Physical # 11, Physical # 12	W	830	Sonar, Radar, and Lasers gives an overview of how these three technologies work and their current and possible future applications.

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The Sun and Other Stars * ISBN 0022847197 6 PK ISBN 0022865055	Earth/Space # 13, Earth/Space # 14	U	770	<i>The Sun and Other Stars</i> compares the Sun to other stars, describes eclipses, the life cycle of stars, constellations, galaxies, and the history of astronomy.
The Water Cycle * ISBN 0022847138 6 PK ISBN 0022864989	Earth/Space # 7, Earth/Space # 10, Earth/Space # 11, Life # 7, Physical # 3	U	900	The importance of water on Earth, the water cycle, aquifers, glaciers, wetlands, and water use management are discussed in <i>The Water Cycle</i> .
The Weather Detectives * ISBN 0022847162 6 PK ISBN 0022865020	Earth/Space # 6, Earth/Space # 7	U	840	<i>The Weather Detectives</i> describes historic and current methods and tools used for weather forecasting. Clouds, air pressure, and humidity are characteristics of weather that are defined and discussed in this book.
Weird and Wonderful Plants * ISBN 0022847065 6 PK ISBN 002286492X	Life # 6, Life # 11	U	830	<i>Weird and Wonderful Plants</i> explains the process of photosynthesis. It also describes parasitic plants, semi-parasitic plants, epiphytes, and insect-eating plants.
What is GPS? ISBN 0022859055 6 PK ISBN 0022866280	Physical # 4	Q	610	<i>What is GPS?</i> describes historic methods of navigation and explains how Global Position Systems work and are used. The role of satellites in the function of Global Position Systems is described, and causes of errors in GPS readings are discussed.
When Energy Changes * ISBN 0022859128 6 PK ISBN 0022866396	Life # 11, Physical # 4, Physical # 5, Physical # 6, Physical # 8, Physical # 11	T	660	Forms of energy and changes in energy are described in <i>When Energy Changes</i> . This book also describes uses of solar energy, the history of electricity, how an electric circuit works, and how sound is heard.

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Massachusetts Science and Technology/Engineering Curriculum Framework

Standard**Earth and Space Science, Grade 5****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 5

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 5

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 5****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.