

TITLE	MI STANDARDS ADDRESSED	GR LEVEL	LEXILE LEVEL	BOOK SUMMARY	VOCABULARY
Air Pollution ISBN 0022847170 6 PK ISBN 0022865039	S.IP.05.15, S.RS.05.15, S.RS.05.17, S.RS.05.19	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.	acid rain atmosphere chlorofluorocarbon fossil fuel greenhouse effect
Alloys: Metals in the Mix * ISBN 002284726X 6 PK ISBN 0022865128	S.IP.05.15, S.IA.05.15, S.RS.05.19	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.	alloy cermet converter cupronickel ore
Amusement Park Rides ISBN 0022859152 6 PK ISBN 0022866361	S.IA.05.13, S.RS.05.15, S.RS.05.19, P.FM.05.22, P.FM.05.31, P.FM.05.32, P.FM.05.33, P.FM.05.34	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.	force friction g-force gravity motion
Animal Adaptations ISBN 0022847111 6 PK ISBN 0022864962	S.IP.05.15, S.RS.05.15, L.EV.05.11, L.EV.05.12, L.EV.05.14	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.	adaptation camouflage habitat mimicry niche
Can Cells Grow Too Much? ISBN 0022847049 6 PK ISBN 002286489X	S.RS.05.15, S.RS.05.19, L.OL.05.41, L.HE.05.11, L.HE.05.12	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.	cancer cell chemotherapy mitosis tumor
Carbon All Around * ISBN 0022847235 6 PK ISBN 002286508X	S.RS.05.15, S.RS.05.17, L.EV.05.13	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.	carbon carbon cycle carbon dioxide graphite greenhouse effect

* - Also available in an English Language Learner version

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Cells ISBN 0022847022 6 PK ISBN 0022864873	S.IP.05.11, S.IP.05.13, S.IA.05.13, S.RS.05.15, S.RS.05.17, S.RS.05.19, L.OL.05.41	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.	cell cell membrane cytoplasm mitochondria nucleus
Costa Rican Rain Forests ISBN 0022847081 6 PK ISBN 0022864946	S.RS.05.15, S.RS.05.17, L.EV.05.11, L.EV.05.12	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.	adaptation life cycle metamorphosis predator vertebrate
Discovering the Elements ISBN 0022847227 6 PK ISBN 0022865071	S.RS.05.15, S.RS.05.19, E.ST.05.24	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.	atom atomic weight element periodic table property
Earth's Heat ISBN 0022861750 6 PK ISBN 0022866310	S.IA.05.12, S.RS.05.15, S.RS.05.19	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.	Lava lithosphere magma mantle tectonic plates
Earth's Oceans ISBN 0022861742 6 PK ISBN 0022866272	S.RS.05.15, S.RS.05.17, L.EV.05.11, L.EV.05.12	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.	abyssal plain continental shelf current plankton vent
Earth's Water ISBN 0022861769 6 PK ISBN 0022864997	S.IP.05.15, S.RS.05.15, S.RS.05.17	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.	condensation precipitation reservoir water cycle water treatment

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Genetics ISBN 0022859136 6 PK ISBN 0022866256	S.IA.05.12, S.RS.05.15, S.RS.05.17, S.RS.05.19, L.HE.05.11, L.HE.05.12	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.	chromosome DNA gene genetics heredity
Global Weather ISBN 0022859144 6 PK ISBN 0022866337	S.IA.05.12, S.RS.05.15, S.RS.05.17	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.	air pressure drought global wind patterns meteorologist troposphere
Hurricanes and Tornadoes ISBN 0022847154 6 PK ISBN 0022865012	S.IA.05.12, S.RS.05.15, S.RS.05.19	T	830	Hurricanes and Tornadoes explains how hurricanes and tornadoes form, locations where they commonly occur, and types of damage they cause.	air pressure cyclone hurricane thunderstorm typhoon
Life Goes On * ISBN 0022847219 6 PK ISBN 0022865063	S.RS.05.15, L.HE.05.11, L.HE.05.12, L.EV.05.11, L.EV.05.12	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.	asexual reproduction fertilization pollination sexual reproduction species
Life on a Space Station ISBN 0022847219 6 PK ISBN 0022865063	S.RS.05.15, S.RS.05.16, S.RS.05.19	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 .	atmosphere microgravity mission orbit radiation
Looking to the Sky ISBN 0022847189 6 PK ISBN 0022865047	S.RS.05.15, S.RS.05.19, E.ST.05.21	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.	astronomy comet galaxy rocketry telescope

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TITLE	MI STANDARDS ADDRESSED	GR LEVEL	LEXILE LEVEL	BOOK SUMMARY	VOCABULARY
Magnetism ISBN 0022859071 6 PK ISBN 0022866388	S.RS.05.15, S.RS.05.16, S.RS.05.19, P.FM.05.22	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.	compass electromagnet magnet magnetic field pole
Mission: Green Earth * ISBN 0022859101 6 PK ISBN 0022866329	S.RS.05.15, S.RS.05.16, S.RS.05.17, L.EV.05.14	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.	environment global warming natural resource nonrenewable renewable
Mixtures and Solutions ISBN 0022859373 6 PK ISBN 0022866345	S.RS.05.15	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.	chemical change mixture physical change solution suspension
Motion and Energy at Play * ISBN 002285911X 6 PK ISBN 002286637X	S.RS.05.15, S.RS.05.19, P.FM.05.22, P.FM.05.31, P.FM.05.32, P.FM.05.33, P.FM.05.42	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.	accelerate friction gravity inertia physics
Nature's Partners ISBN 0022859047 6 PK ISBN 0022866264	S.IA.05.12, S.IA.05.15, S.RS.05.15, L.EV.05.11	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.	commensalism mutualism organism parasitism symbiosis
One-Celled Organisms * ISBN 0022847030 6 PK ISBN 0022864881	S.RS.05.19, L.EV.05.11, L.EV.05.12, L.EV.05.21	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.	bacteria cell fungi/fungus microbe protist

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TITLE	MI STANDARDS ADDRESSED	GR LEVEL	LEXILE LEVEL	BOOK SUMMARY	VOCABULARY
Periodic Table Families ISBN 0022847243 6 PK ISBN 0022865098	S.RS.05.15, S.RS.05.19	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.	atom element matter metal metalloid
Plastics ISBN 0022847278 6 PK ISBN 0022865136	S.RS.05.15, S.RS.05.17, S.RS.05.19	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.	compound molecule plastic polymer synthetic
Seeds and Spores ISBN 0022861734 6 PK ISBN 0022864938	S.RS.05.19, L.EV.05.21	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.	fertilization pollination reproduce seed spores
Shake, Rattle, and Explode * ISBN 0022859098 6 PK ISBN 0022866299	S.RS.05.15, S.RS.05.19	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.	erupt lava magma seismograph tsunami
Sir Isaac Newton ISBN 0022859063 6 PK ISBN 0022866353	S.IP.05.12, S.RS.05.15, S.RS.05.19, P.FM.05.22, P.FM.05.32, P.FM.05.33, P.FM.05.34	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.	experiment force gravity mass motion
Sonar, Radar, and Lasers ISBN 0022859160 6 PK ISBN 0022863418	S.RS.05.15, S.RS.05.19, L.EV.05.11, L.EV.05.12	W	830	Sonar, Radar, and Lasers gives an overview of how these three technologies work and their current and possible future applications.	laser optic fiber radar sonar transmitter

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TITLE	MI STANDARDS ADDRESSED	GR LEVEL	LEXILE LEVEL	BOOK SUMMARY	VOCABULARY
The Sun and Other Stars * ISBN 0022847197 6 PK ISBN 0022865055	S.IA.05.12, S.RS.05.15, S.RS.05.19, E.ST.05.23, E.ST.05.24	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.	astronomer galaxy light year solar system supernova
The Water Cycle * ISBN 0022847138 6 PK ISBN 0022864989	S.IA.05.12, S.RS.05.15, S.RS.05.17	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> .	aquifer condense evaporate groundwater precipitation
The Weather Detectives * ISBN 0022847162 6 PK ISBN 0022865020	S.RS.05.19, L.EV.05.11	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.	air pressure barometer front humidity meteorology
Weird and Wonderful Plants * ISBN 0022847065 6 PK ISBN 002286492X	S.RS.05.15, L.EV.05.12	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.	chlorophyll epiphyte nitrogen parasite photosynthesis
What is GPS? ISBN 0022859055 6 PK ISBN 0022866280	S.IP.05.15, S.RS.05.15, S.RS.05.19	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.	GPS (Global Positioning System) latitude longitude orbit satellite
When Energy Changes * ISBN 0022859128 6 PK ISBN 0022866396	S.RS.05.15, S.RS.05.16, S.RS.05.19, L.EV.05.11, L.EV.05.12	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.	circuit electric current energy force solar energy

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Michigan Science Grade Level Content Expectations

SCIENCE PROCESSES

Inquiry Process

K-7 Standard S.IP

Develop an understanding that scientific inquiry and reasoning involves observing, questioning, investigating, recording, and developing solutions to problems

S.IP.M.1

Inquiry involves generating questions, conducting investigations, and developing solutions to problems through reasoning and observation.

S.IP.05.11

Generate scientific questions based on observations, investigations, and research.

S.IP.05.12

Design and conduct scientific investigations.

S.IP.05.13

Use tools and equipment (spring scales, stop watches, meter sticks and tapes, models, hand lens) appropriate to scientific investigations.

S.IP.05.14

Use metric measurement devices in an investigation.

S.IP.05.15

Construct charts and graphs from data and observations.

S.IP.05.16

Identify patterns in data.

Inquiry Analysis and Communication

K-7 Standard S.IA

Develop an understanding that scientific inquiry and investigations require analysis and communication of findings, using appropriate technology.

S.IA.M.1

Inquiry includes an analysis and presentation of findings that lead to future questions, research, and investigations.

S.IA.05.11

Analyze information from data tables and graphs to answer scientific questions.

- S.IA.05.12 Evaluate data, claims, and personal knowledge through collaborative science discourse.
- S.IA.05.13 Communicate and defend findings of observations and investigations using evidence.
- S.IA.05.14 Draw conclusions from sets of data from multiple trials of a scientific investigation.
- S.IA.05.15 Use multiple sources of information to evaluate strengths and weaknesses of claims, arguments, or data.

Reflection and Social Implications

K-7 Standard S.RS

Develop an understanding that claims and evidence for their scientific merit should be analyzed. Understand how scientists decide what constitutes scientific knowledge. Develop an understanding of the importance of reflection on scientific knowledge and its application to new situations to better understand the role of science in society and technology.

S.RS.M.1

Reflecting on knowledge is the application of scientific knowledge to new and different situations. Reflecting on knowledge requires careful analysis of evidence that guides decision-making and the application of science throughout history and within society.

- S.RS.05.11 Evaluate the strengths and weaknesses of claims, arguments, and data.
- S.RS.05.12 Describe limitations in personal and scientific knowledge.
- S.RS.05.13 Identify the need for evidence in making scientific decisions.
- S.RS.05.15 Demonstrate scientific concepts through various illustrations, performances, models, exhibits, and activities.
- S.RS.05.16 Design solutions to problems using technology.
- S.RS.05.17 Describe the effect humans and other organisms have on the balance in the natural world.
- S.RS.05.19 Describe how science and technology have advanced because of the contributions of many people throughout history and across cultures.

PHYSICAL SCIENCE**Forces and Motion****K-7 Standard P.FM**

Develop an understanding that the position and/or motion of an object is relative to a point of reference. Understand forces affect the motion and speed of an object and that the net force on an object is the total of all of the forces acting on it. Understand the Earth pulls down on objects with a force called gravity. Develop an understanding that some forces are in direct contact with objects, while other forces are not in direct contact with objects.

P.FM.M.2

Force Interactions- Some forces between objects act when the objects are in direct contact (touching), such as friction and air resistance, or when they are not in direct contact (not touching), such as magnetic force, electrical force, and gravitational force.

P.FM.05.21

Distinguish between contact forces and non-contact forces.

P.FM.05.22

Demonstrate contact and non-contact forces to change the motion of an object.

P.FM.M.3

Force- Forces have a magnitude and direction. Forces can be added. The net force on an object is the sum of all of the forces acting on the object. The speed and/or direction of motion of an object changes when a non-zero net force is applied to it. A balanced force on an object does not change the motion of the object (the object either remains at rest or continues to move at a constant speed in a straight line).

P.FM.05.31

Describe what happens when two forces act on an object in the same or opposing directions.

P.FM.05.32

Describe how constant motion is the result of balanced (zero net) forces.

P.FM.05.33

Describe how changes in the motion of objects are caused by a non-zero net (unbalanced) force.

P.FM.05.34

Relate the size of change in motion to the strength of unbalanced forces and the mass of the object.

P.FM.M.4

Speed- Motion can be described by a change in position relative to a point of reference. The motion of an object can be described by its speed and the direction it is moving. The position and speed of an object can be measured and graphed as a function of time.

- P.FM.05.41 Explain the motion of an object relative to its point of reference.
- P.FM.05.42 Describe the motion of an object in terms of distance, time and direction, as the object moves, and in relationship to other objects.
- P.FM.05.43 Illustrate how motion can be measured and represented on a graph.

LIFE SCIENCE

Organization of Living Things

K-7 Standard L.OL

Develop an understanding that plants and animals (including humans) have basic requirements for maintaining life which include the need for air, water and a source of energy. Understand that all life forms can be classified as producers, consumers, or decomposers as they are all part of a global food chain where food/energy is supplied by plants which need light to produce food/energy. Develop an understanding that plants and animals can be classified by observable traits and physical characteristics. Understand that all living organisms are composed of cells and they exhibit cell growth and division. Understand that all plants and animals have a definite life cycle, body parts, and systems to perform specific life functions.

L.OL.M.4

Animal Systems- Multicellular organisms may have specialized systems that perform functions which serve the needs of the organism.

- L.OL.05.41 Identify the general purpose of selected animal systems (digestive, circulatory, respiratory, skeletal, muscular, nervous, excretory, and reproductive).
- L.OL.05.42 Explain how animal systems (digestive, circulatory, respiratory, skeletal, muscular, nervous, excretory, and reproductive) work together to perform selected activities.

Heredity

K-7 Standard L.HE

Develop an understanding that all life forms must reproduce to survive. Understand that characteristics of mature plants and animals may be inherited or acquired and that only inherited traits are passed on to their young. Understand that inherited traits can be influenced by changes in the environment and by genetics.

L.HE.M.1

Inherited and Acquired Traits – The characteristics of organisms are influenced by heredity and environment. For some characteristics, inheritance is more important; for other characteristics, interactions with the environment are more important.

L.HE.05.11

Explain that the traits of an individual are influenced by both the environment and the genetics of the individual.

L.HE.05.12

Distinguish between inherited and acquired traits.

Evolution**K-7 Standard L.EV**

Develop an understanding that plants and animals have observable parts and characteristics that help them survive and flourish in their environments. Understand that fossils provide evidence that life forms have changed over time and were influenced by changes in environmental conditions. Understand that life forms either change (evolve) over time or risk extinction due to environmental changes and describe how scientists identify the relatedness of various organisms based on similarities in anatomical features.

L.EV.M.1

Species Adaptation and Survival- Species with certain traits are more likely than others to survive and have offspring in particular environments. When an environment changes, the advantage or disadvantage of the species' characteristics can change. Extinction of a species occurs when the environment changes and the characteristics of a species are insufficient to allow survival.

L.EV.05.11

Explain how behavioral characteristics (adaptation, instinct, learning, habit) of animals help them to survive in their environment.

L.EV.05.12

Describe the physical characteristics (traits) of organisms that help them survive in their environment.

L.EV.05.13

Describe how fossils provide evidence about how living things and environmental conditions have changed.

L.EV.05.14

Analyze the relationship of environmental change and catastrophic events (for example: volcanic eruption, floods, asteroid impacts, tsunami) to species extinction.

L.EV.M.2

Relationships Among Organisms- Similarities among organisms are found in anatomical features, which can be used to infer the degree of relatedness among organisms. In classifying organisms, biologists consider details of internal and external structures to be more important than behavior or general appearance.

L.EV.05.21

Relate degree of similarity in anatomical features to the classification of contemporary organisms.

EARTH SCIENCE

Earth Systems

K-7 Standard E.ES

Develop an understanding of the warming of the Earth by the sun as the major source of energy for phenomenon on Earth and how the sun's warming relates to weather, climate, seasons, and the water cycle. Understand how human interaction and use of natural resources affects the environment.

E.ES.M.6

Seasons- Seasons result from annual variations in the intensity of sunlight and length of day due to the tilt of the axis of the Earth relative to the plane of its yearly orbit around the sun.

E.ES.05.61

Demonstrate using a model, seasons as the result of variations in the intensity of sunlight caused by the tilt of the Earth on its axis, and revolution around the sun.

E.ES.05.62

Explain how the revolution of the Earth around the sun defines a year.

Earth in Space and Time

K-7 Standard E.ST

Develop an understanding that the sun is the central and largest body in the solar system and that Earth and other objects in the sky move in a regular and predictable motion around the sun. Understand that those motions explain the day, year, moon phases, eclipses and the appearance of motion of objects across the sky. Understand that gravity is the force that keeps the planets in orbit around the sun and governs motion in the solar system. Develop an understanding that fossils and layers of Earth provide evidence of the history of Earth's life forms, changes over long periods of time, and theories regarding Earth's history and continental drift.

E.ST.M.1

Solar System- The sun is the central and largest body in our solar system. Earth is the third planet from the sun in a system that includes other planets and their moons, as well as smaller objects, such as asteroids and comets.

- E.ST.05.11 Design a model that describes the position and relationship of the planets and other objects (comets and asteroids) to the sun.
- E.ST.M.2 **Solar System Motion- Gravity is the force that keeps most objects in the solar system in regular and predictable motion.****
- E.ST.05.21 Describe the motion of planets and moons in terms of rotation on axis and orbits due to gravity.
- E.ST.05.22 Explain moon phases as they relate to the position of the moon in its orbit around the Earth, resulting in the amount of observable reflected light.
- E.ST.05.23 Recognize that nighttime objects (stars and constellations) and the sun appear to move because the Earth rotates on its axis and orbits the sun.
- E.ST.05.24 Explain lunar and solar eclipses based on the relative positions of the Earth, moon, and sun, and the orbit of the moon.
- E.ST.05.25 Explain the tides of the oceans as they relate to the gravitational pull and orbit of the moon.