

TITLE	IL STANDARDS ADDRESSED	GR LEVEL	LEXILE LEVEL	BOOK SUMMARY	VOCABULARY
All About the Moon ISBN 0022859330 6 PK ISBN 002286654X	12.F.3a, 12.F.3b, 13.B.3b	Z	730	<i>All About the Moon</i> compares and contrasts Earth and the Moon, describes the history of the Moon landings, explains the motion of the Moon, and discusses the phases of the Moon.	crater lunar mare orbit satellite
Alloys ISBN 0022859381 6 PK ISBN 0022866574	12.C.3b, 13.B.3a, 13.B.3b, 13.B.3c, 13.B.3d	Y	860	<i>Alloys</i> describes historical uses of metals and alloys, such as bronze and iron. It also describes current applications of alloys and possible future uses of alloys.	alloy bronze corrosion iron steel
Amazing Water ISBN 0022859209 6 PK ISBN 0022866558	12.A.3a, 12.C.3a, 12.C.3b, 12.E.3a, 12.E.3b, 13.B.3d, 13.B.3e	T	560	The unique properties of water, uses of water, the water cycle, water pollution, and the possibility of water on other planets are described in <i>Amazing Water</i> .	condense evaporate precipitation solvent surface tension
Animal Migration ISBN 0022859179 6 PK ISBN 0022866426	12.B.3b	S	670	<i>Animal Migration</i> explores the migration patterns of whales, monarch butterflies, warblers, and sea turtles. The life cycle of the Monarch butterfly is diagrammed, and maps are used to illustrate migration routes.	habitat metamorphosis migration plankton predator
Antarctica: Land of Snow and Ice ISBN 0022847324 6 PK ISBN 0022865179	12.B.3a, 12.B.3b, 13.B.3b, 13.B.3d, 13.B.3e	V	900	In <i>Antarctica: Land of Snow and Ice</i> , the terms <i>habitat</i> , <i>biome</i> , and <i>ecosystem</i> are defined. The climate and living things of Antarctica are described.	biome ecosystem glacier habitat microhabitat
Bacteria and Viruses ISBN 0022859292 6 PK ISBN 0022866442	12.A.3b, 12.B.3a, 12.B.3b, 13.B.3b, 13.B.3c	Y	660	<i>Bacteria and Viruses</i> begins with a discussion of early discoveries related to microscopes and microorganisms. Various types of bacteria are discussed and pictured. The role of bacteria in ecosystems and ways that bacteria impact humans are also discussed.	antibiotic microscope pasteurization virus

* - Also available in an English Language Learner version

TITLE	IL STANDARDS ADDRESSED	GR LEVEL	LEXILE LEVEL	BOOK SUMMARY	VOCABULARY
Building a Biome * ISBN 0022847332 6 PK ISBN 0022865187	12.A.3c, 12.B.3a, 12.B.3b, 13.B.3c, 13.B.3e	X	910	Construction of the deserts biome in the Indianapolis Zoo is described in Building a Biome . Characteristics of desert biomes are described and career opportunities at zoos are identified.	biome conservation ecosystem precipitation species
Carbon ISBN 0022859217 6 PK ISBN 0022866582	12.C.3a, 12.C.3b, 12.E.3a, 13.B.3d	S	600	Carbon describes forms of carbon, uses of carbon, the role of carbon in living things, the carbon cycle, fossil fuels, and the greenhouse effect.	Atom compound element organic compound respiration
Changes at Earth's Surface ISBN 0022847421 6 PK ISBN 0022865276	12.D.3a, 12.E.3a, 12.E.3b	V	880	Changes at Earth's Surface describes physical and chemical weathering, erosion, deposition, and the changes that result from these processes.	chemical weathering deposition erosion gravity physical weathering
Chemical Changes * ISBN 0022859276 6 PK ISBN 0022866590	12.B.3b, 12.C.3a, 12.C.3b, 13.B.3b	X	630	Chemical Changes contains a description of the signs that indicate a chemical change has occurred, everyday applications of chemical changes, and chemical changes that occur in organisms.	chemical change combustion compound element reaction
Discovering the Secrets of Cells * ISBN 0022859233 6 PK ISBN 0022866469	12.A.3a, 13.B.3a, 13.B.3b, 13.B.3c	X	720	Discovering the Secrets of Cells explores careers in cell biology, the function of organelles, and tools such as computers that are used in cell research.	Cell DNA gene neuron nucleus
DNA Fingerprinting ISBN 0022859322 6 PK ISBN 0022866515	13.B.3b, 13.B.3c	Y	720	DNA Fingerprinting describes applications of DNA technology to solving crimes, tracing ancestry, solving historical mysteries, and tracking genetic diseases.	Base DNA fingerprinting gene inherit mutation

* - Also available in an English Language Learner version

TITLE	IL STANDARDS ADDRESSED	GR LEVEL	LEXILE LEVEL	BOOK SUMMARY	VOCABULARY
<p>Do Fossil Fuels Have a Future? *</p> <p>ISBN 0022847499 6 PK ISBN 0022865349</p>	13.B.3a, 13.B.3b, 13.B.3d, 13.B.3e	X	900	<i>Do Fossil Fuels Have a Future?</i> explains the formation of fossil fuels, methods of mining fossil fuels, consequences of the use of fossil fuels, and possible alternatives to fossil fuels.	acid rain coal decompose fossil fuel petroleum
<p>Earth's Changing Climate *</p> <p>ISBN 002285925X 6 PK ISBN 0022866523</p>	12.E.3a, 12.E.3b, 13.B.3b, 13.B.3c, 13.B.3d, 13.B.3f	W	740	Climate, climate change, and the science of studying climates are discussed in <i>Earth's Changing Climate</i> .	climate climatologist core drought weather
<p>Ecosystems</p> <p>ISBN 0022847316 6 PK ISBN 0022865160</p>	12.B.3a, 13.B.3d, 13.B.3e, 13.B.3f	Y	910	<i>Ecosystems</i> discusses energy flow within ecosystems, human impact on ecosystems, and ways that individuals can have a positive impact on ecosystems.	conservation consumer decomposer ecosystem producer
<p>Einstein, Newton, and Gravity</p> <p>ISBN 0022859489 6 PK ISBN 0022866639</p>	12.D.3a, 12.D.3b, 12.F.3a, 12.F.3b, 13.B.3b	X	760	<i>Einstein, Newton, and Gravity</i> discusses the development of ideas about gravity and space-time, and highlights the cumulative nature of scientific knowledge.	force gravity inertia mass theory
<p>Energy Hunter *</p> <p>ISBN 0022847367 6 PK ISBN 0022865225</p>	12.E.3c, 13.B.3c, 13.B.3d, 13.B.3e	X	810	<i>Energy Hunter</i> identifies sources of energy including biomass, geothermal, solar, fossil fuels, and nuclear reactions.	biomass geothermal energy nuclear fusion renewable solar energy
<p>Exploring the Ocean Depths *</p> <p>ISBN 0022859268 6 PK ISBN 0022866566</p>	12.A.3c, 12.B.3a, 12.B.3b, 13.B.3b, 13.B.3c	X	710	<i>Exploring the Ocean Depths</i> describes how technology is used to advance science by allowing humans to explore the deepest parts of the ocean.	adaptation bioluminescence geyser hydrothermal vent probe

* - Also available in an English Language Learner version

TITLE	IL STANDARDS ADDRESSED	GR LEVEL	LEXILE LEVEL	BOOK SUMMARY	VOCABULARY
Finding Our Way ISBN 0022859195 6 PK ISBN 0022866531	13.B.3a, 13.B.3b, 13.B.3c	T	640	<i>Finding Our Way</i> describes methods of navigation, longitude and latitude, historic navigation tools, and modern navigation tools such as GPS.	astrolabe compass Global Positioning System (GPS) latitude longitude
Fire in the Sierra Nevada ISBN 0022847340 6 PK ISBN 0022865195	12.B.3a, 12.B.3b, 13.B.3e	Y	840	<i>Fire in the Sierra Nevada</i> describes the communities of living things found in the Sierra Nevada and the role that fire plays in keeping this ecosystem in balance.	chaparral ecosystem habitat ignite vegetation
Foods that Feed the World * ISBN 0022859225 6 PK ISBN 0022866434	13.B.3a, 13.B.3b, 13.B.3c	X	730	<i>Foods That Feed the World</i> describes agriculture, food production, and ways that science has improved agricultural practices over time.	agriculture fertilizer pesticide breeding staple
Greenhouse Effect ISBN 0022847456 6 PK ISBN 0022865306	12.E.3b, 13.B.3c, 13.B.3d, 13.B.3e, 13.B.3f	V	820	<i>Greenhouse Effect</i> describes the role of the greenhouse effect in making Earth habitable and describes ways that human activity impacts the greenhouse effect, the ozone layer, and global climate.	atmosphere carbon dioxide deforestation global warming greenhouse effect
Gregor Mendel * ISBN 0022859241 6 PK ISBN 0022866493	13.B.3b, 13.B.3c	W	710	In <i>Gregor Mendel</i> , the experimental methods used by Gregor Mendel are described. This book also describes how Mendel's results used ratios, discusses Mendel's laws, and identifies ways that Mendel's work impacted the work of other scientists.	dominant genetics heredity hybrid recessive
Hidden Life In A Pond ISBN 0022859314 6 PK ISBN 0022866477	12.A.3c, 12.B.3a, 12.B.3b, 13.B.3b	Y	720	<i>Hidden Life in a Pond</i> identifies microorganisms found in pond water and explains the history of the microscope.	algae bacteria food web habitat protozoa

* - Also available in an English Language Learner version

TITLE	IL STANDARDS ADDRESSED	GR LEVEL	LEXILE LEVEL	BOOK SUMMARY	VOCABULARY
How Do Toys Work? * ISBN 0022859284 6 PK ISBN 0022866620	12.D.3a, 12.D.3b, 12.F.3a,	W	710	<i>How Do Toys Work?</i> applies concepts of physics, such as motion, forces, friction, and momentum to toys such as yo-yos and model airplanes.	energy force friction gravity momentum
Microorganisms ISBN 0022859187 6 PK ISBN 0022866450	13.B.3b, 13.B.3c	S	570	<i>Microorganisms</i> identifies types of microorganisms, discusses the development of the microscope, and explains the role of microorganisms in disease and in food production.	antibiotic bacteria microbe protist vaccine
Microwaves and Cooking ISBN 0022847480 6 PK ISBN 0022865330	12.C.3a, 13.B.3a, 13.B.3b, 13.B.3c	W	820	<i>Microwaves and Cooking</i> describes the accidental discovery that microwaves cook food, development of the microwave oven over time, and the process of scientific invention.	electron magnetron microwave nonionizing radiation patent
Nuclear Medicine ISBN 0022859349 6 PK ISBN 0022866604	12.C.3a, 13.B.3a, 13.B.3b, 13.B.3c	Y	750	<i>Nuclear Medicine</i> describes the application of radioactive materials in medicine. The book describes X rays, bone scans, MRI, and radiation therapy.	barium CT scan MRI nuclear medicine X ray
Power for Our Future ISBN 0022847375 6 PK ISBN 0022865233	12.E.3c, 13.B.3b, 13.B.3d, 13.B.3e, 13.B.3f	Y	940	<i>Power For Our Future</i> describes the need for renewable energy resources such as solar energy, geothermal energy, fuel cells, and biomass fuels.	geothermal energy hydrogen solar power renewable tidal energy
Powered by the Sun ISBN 0022847472 6 PK ISBN 0022865322	12.C.3a, 12.E.3a, 12.E.3c, 13.B.3b, 13.B.3c, 13.B.3d, 13.B.3e, 13.B.3f	Y	890	<i>Powered By the Sun</i> describes nuclear fusion in the Sun and the role of the Sun's energy in the water cycle and fossil fuel formation. It also describes ways that solar energy can be captured and used to make electricity, heat water, heat homes, and power spacecraft.	array insulation nuclear fusion renewable resource solar energy

* - Also available in an English Language Learner version

TITLE	IL STANDARDS ADDRESSED	GR LEVEL	LEXILE LEVEL	BOOK SUMMARY	VOCABULARY
Skates Bikes, and Rockets ISBN 0022859470 6 PK ISBN 0022866612	12.D.3a, 12.D.3b	S	830	<i>Skates, Bikes, and Rockets</i> describes how Newton's laws of motion are demonstrated by inline skates, ice skates, bicycles, and rockets.	force friction gravity inertia newton
Sun Storms * ISBN 0022847464 6 PK ISBN 0022865314	12.C.3a, 12.F.3b, 12.F.3c, 13.B.3c	X	900	<i>Sun Storms</i> describes solar events such as solar flares and sunspots and the way these events affect Earth. It also describes methods scientists use to study the Sun.	corona magnetic field plasma solar flare sunspot
The Ring of Fire ISBN 0022847413 6 PK ISBN 0022865268	12.E.3a, 12.E.3b, 13.B.3c	Z	940	<i>The Ring of Fire</i> describes the most severe earthquakes and volcanic events associated with the Ring of Fire. Tsunamis and tsunami warning systems are also discussed.	aftershock earthquake seismic tsunami volcano
The Story of DNA ISBN 0022859446 6 PK ISBN 0022866485	13.B.3b, 13.B.3c	S	840	<i>The Story of DNA</i> highlights the discoveries of Watson and Crick, Mendel, Wilkins and Franklin, and Francis Collins. It discusses the role of DNA in the inheritance of traits and new developments in DNA technology.	cell DNA gene genetics mutate
Tracing the Food Web ISBN 0022847286 6 PK ISBN 0022865144	12.A.3c, 12.B.3a, 12.C.3a	V	860	The flow of energy in a variety of ecosystems is described in <i>Tracing the Food Web</i> . Human impact on the world's ecosystems is also described.	Consumer decomposer ecosystem food chain food web
Tsunami! * ISBN 0022847391 6 PK ISBN 002286525X	12.E.3a, 12.E.3b, 13.B.3c	X	880	<i>Tsunami!</i> describes the formation and aftermath of the tsunami of December 26, 2004, as well as ways that tsunamis can be predicted and prepared for.	geologist lithosphere meteorite Richter scale tectonic plate

* - Also available in an English Language Learner version

ILLINOIS LEARNING STANDARDS

STATE GOAL 11:

Understand the processes of scientific inquiry and technological design to investigate questions, conduct experiments and solve problems.

Why This Goal Is Important: The inquiry process prepares learners to engage in science and apply methods of technological design. This understanding will enable students to pose questions, use models to enhance understanding, make predictions, gather and work with data, use appropriate measurement methods, analyze results, draw conclusions based on evidence, communicate their methods and results, and think about the implications of scientific research and technological problem solving.

A.

Know and apply the concepts, principles and processes of scientific inquiry.

11.A.3a

Formulate hypotheses that can be tested by collecting data.

11.A.3b

Conduct scientific experiments that control all but one variable.

11.A.3c

Collect and record data accurately using consistent measuring and recording techniques and media.

11.A.3d

Explain the existence of unexpected results in a data set.

11.A.3e

Use data manipulation tools and quantitative (e.g., mean, mode, simple equations) and representational methods (e.g., simulations, image processing) to analyze measurements.

11.A.3f

Interpret and represent results of analysis to produce findings.

11.A.3g

Report and display the process and results of a scientific investigation.

B.

Know and apply the concepts, principles and processes of technological design.

11.B.3a

Identify an actual design problem and establish criteria for determining the success of a solution.

11.B.3b

Sketch, propose and compare design solutions to the problem considering available materials, tools, cost effectiveness and safety.

- 11.B.3c Select the most appropriate design and build a prototype or simulation.
- 11.B.3d Test the prototype using available materials, instruments and technology and record the data.
- 11.B.3e Evaluate the test results based on established criteria, note sources of error and recommend improvements.
- 11.B.3f Using available technology, report the relative success of the design based on the test results and criteria.

STATE GOAL 12:

Understand the fundamental concepts, principles and interconnections of the life, physical and earth/space sciences.

Why This Goal Is Important: This goal is comprised of key concepts and principles in the life, physical and earth/space sciences that have considerable explanatory and predictive power for scientists and non-scientists alike. These ideas have been thoroughly studied and have stood the test of time. Knowing and being able to apply these concepts, principles and processes help students understand what they observe in nature and through scientific experimentation. A working knowledge of these concepts and principles allows students to relate new subject matter to material previously learned and to create deeper and more meaningful levels of understanding.

A. Know and apply concepts that explain how living things function, adapt and change.

- 12.A.3a Explain how cells function as “building blocks” of organisms and describe the requirements for cells to live.
- 12.A.3b Compare characteristics of organisms produced from a single parent with those of organisms produced by two parents.
- 12.A.3c Compare and contrast how different forms and structures reflect different functions (e.g., similarities and differences among animals that fly, walk or swim; structures of plant cells and animal cells).

B. Know and apply concepts that describe how living things interact with each other and with their environment.

- 12.B.3a Identify and classify biotic and abiotic factors in an environment that affect population density, habitat and placement of organisms in an energy pyramid.
- 12.B.3b Compare and assess features of organisms for their adaptive, competitive and survival potential (e.g., appendages, reproductive rates, camouflage, defensive structures).

C. Know and apply concepts that describe properties of matter and energy and the interactions between them.

- 12.C.3a Explain interactions of energy with matter including changes of state and conservation of mass and energy.
- 12.C.3b Model and describe the chemical and physical characteristics of matter (e.g., atoms, molecules, elements, compounds, mixtures).

D. Know and apply concepts that describe force and motion and the principles that explain them.

- 12.D.3a Explain and demonstrate how forces affect motion (e.g., action/reaction, equilibrium conditions, free-falling objects).
- 12.D.3b Explain the factors that affect the gravitational forces on objects (e.g., changes in mass, distance).

E. Know and apply concepts that describe the features and processes of the Earth and its resources.

- 12.E.3a Analyze and explain large-scale dynamic forces, events and processes that affect the Earth's land, water and atmospheric systems (e.g., jet stream, hurricanes, plate tectonics).
- 12.E.3b Describe interactions between solid earth, oceans, atmosphere and organisms that have resulted in ongoing changes of Earth (e.g., erosion, El Nino).
- 12.E.3c Evaluate the biodegradability of renewable and nonrenewable natural resources.

F. Know and apply concepts that explain the composition and structure of the universe and Earth's place in it.

- 12.F.3a Simulate, analyze and explain the effects of gravitational force in the solar system (e.g., orbital shape and speed, tides, spherical shape of the planets and moons).
- 12.F.3b Describe the organization and physical characteristics of the solar system (e.g., sun, planets, satellites, asteroids, comets).
- 12.F.3c Compare and contrast the sun as a star with other objects in the Milky Way Galaxy (e.g., nebulae, dust clouds, stars, black holes).

STATE GOAL 13:**Understand the relationships among science, technology and society in historical and contemporary contexts.**

Why This Goal Is Important: Understanding the nature and practices of science such as ensuring the validity and replicability of results, building upon the work of others and recognizing risks involved in experimentation gives learners a useful sense of the scientific enterprise. In addition, the relationships among science, technology and society give humans the ability to change and improve their surroundings. Learners who understand this relationship will be able to appreciate the efforts and effects of scientific discovery and applications of technology on their own lives and on the society in which we live.

A.**Know and apply the accepted practices of science.****13.A.3a**

Identify and reduce potential hazards in science activities (e.g., ventilation, handling chemicals).

13.A.3b

Analyze historical and contemporary cases in which the work of science has been affected by both valid and biased scientific practices.

13.A.3c

Explain what is similar and different about observational and experimental investigations.

B.**Know and apply concepts that describe the interaction between science, technology and society.****13.B.3a**

Identify and explain ways that scientific knowledge and economics drive technological development.

13.B.3b

Identify important contributions to science and technology that have been made by individuals and groups from various cultures.

13.B.3c

Describe how occupations use scientific and technological knowledge and skills.

13.B.3d

Analyze the interaction of resource acquisition, technological development and ecosystem impact (e.g., diamond, coal or gold mining; deforestation).

13.B.3e

Identify advantages and disadvantages of natural resource conservation and management programs.

13.B.3f

Apply classroom-developed criteria to determine the effects of policies on local science and technology issues (e.g., energy consumption, landfills, water quality).