TITLE	PA STANDARDS ADDRESSED	GR LEVEL	LEXILE LEVEL	BOOK SUMMARY	VOCABULARY
A Chemist In the Kitchen ISBN 0022859462 6 PK ISBN 0022866175	3.2.4.C.a., 3.2.4.C.b., 3.2.4.C.c., 3.4.4.A.b., 3.4.4.A.c.	L	680	***A Chemist in the Kitchen*** 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.	**chemist** **chemistry** **compound** **element** **mixture**
A World of Microorganisms ISBN 0022846840 6 PK ISBN 0022864709	3.2.4.B.b., 3.3.4.B.a., 3.6.4.A.d., 3.8.4.A.c., 3.8.4.A.d.	S	720	***A World of Microorganisms*** 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.	**bacteria** **cell** **microbe** **microorganism** **vaccine**
Acids and Bases ISBN 0022859020 6 PK ISBN 0022866191	3.1.4.E.d., 3.2.4.C.c. 3.3.4.B.b., 3.4.4.A.a. 3.4.4.A.b., 3.4.4.A.c. 3.8.4.A.d., 3.8.4.C.b.	T	570	***Acids and Bases*** 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.	**acid** **acidic** **base** **neutral** **pH**
All About Elements ISBN 002285889X 6 PK ISBN 0022866140	3.2.4.A.a., 3.2.4.A.c., 3.4.4.A.a., 3.4.4.A.b.	M	500	***All About Elements*** defines the terms matter and element, discusses historical research of elements, explains the structure of the atom, and the development of the periodic table.	**atom** **atomic weight** **element** **periodic table** **property**
Animal Senses ISBN 0022858989 6 PK ISBN 002286606X	3.3.4.A.b., 3.3.4.B.b.	T	670	***Animal Senses*** 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.	**echolocation** **organ** **sound wave** **taste buds** **tentacle**

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TITLE	PA STANDARDS ADDRESSED	GR LEVEL	LEXILE LEVEL	BOOK SUMMARY	VOCABULARY
Barrier Islands * ISBN 0022858938 6 PK ISBN 0022866116	3.5.4.A.b., 3.5.4.D.e. 3.8.4.A.d., 3.8.4.C.a. 3.8.4.C.b.	R	710	***Barrier Islands*** describes the characteristics of barrier islands and the impact that erosion and hurricanes can have on barrier islands.	**barrier island** **erosion** **hurricane** **storm surge** **tide**
Caves: A World of Their Own * ISBN 0022846794 6 PK ISBN 0022864660	3.3.4.C.a.	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.	**ecosystem** **erosional** **limestone** **mineral** **solution**
Constellations ISBN 0022859012 6 PK ISBN 0022866132	3.2.4.A.c., 3.4.4.D.b.	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.	**astronomer** **astronomy** **constellation** **galaxy**
Desert Animals and Plants ISBN 0022846786 6 PK ISBN 0022864652	3.3.4.A.b., 3.3.4.C.a.	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.	**adapt** **cold-blooded** **saguaro** **scaly** **spine**
Diamonds ISBN 0022846859 6 PK ISBN 0022864717	3.4.4.A.a., 3.5.4.B.a.	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.	**carbon** **gemstone** **kimberlite pipes** **mineral** **Moh's scale**
El Nino ISBN 0022846948 6 PK ISBN 0022864792	3.8.4.A.b., 3.8.4.A.d.	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.	**air pressure** **drought** **El Nino** **global warming** **La Nina**

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TITLE	PA STANDARDS ADDRESSED	GR LEVEL	LEXILE LEVEL	BOOK SUMMARY	VOCABULARY
Fossils and Fossil Fuels ISBN 0022859004 6 PK ISBN 0022866094	3.3.4.D.a., 3.4.4.B.a. 3.5.4.A.d., 3.5.4.B.a. 3.8.4.C.a., 3.8.4.C.b.	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.	**acid rain** **fossil** **fossil fuel** **nonrenewable** **sedimentary rock**
Glaciers ISBN 0022846883 6 PK ISBN 0022864741	3.5.4.A.a., 3.5.4.D.c.	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.	**Glacier** **ice age** **iceberg** **moraine**
Gold! ISBN 0022861726 6 PK ISBN 0022866167	3.5.4.B.a., 3.6.4.C.f.	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	**bullion** **geologist**
Hidden Food Webs * ISBN 0022846832 6 PK ISBN 0022864695	3.3.4.A.c., 3.3.4.B.a.	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.	**consumer** **decomposer** **food web** **microorganism** **producer**
How Can We Save Them? ISBN 0022858997 6 PK ISBN 0022866086	3.8.4.A.d., 3.8.4.C.a., 3.8.4.C.b.	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.	**diversity** **endangered** **extinct** **habitat** **species**
It's Electric * ISBN 0022846964 6 PK ISBN 0022864822	3.4.4.B.a., 3.4.4.B.c. 3.4.4.B.d., 3.4.4.C.b. 3.6.4.C.h., 3.8.4.A.a. 3.8.4.A.b., 3.8.4.A.d. 3.8.4.C.a., 3.8.4.C.b.	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.	**electric current** **electricity** **fossil fuel** **turbine** **volt**

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TITLE	PA STANDARDS ADDRESSED	GR LEVEL	LEXILE LEVEL	BOOK SUMMARY	VOCABULARY
Levers in Our Lives ISBN 0022859039 6 PK ISBN 002286623X	3.7.4.A.b., 3.7.4.A.c., 3.7.4.B.b.	T	520	***Levers in Our Lives*** 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.	**effort force** **fulcrum** **lever** **load** **simple machine**
Lights and White Nights * ISBN 0022858946 6 PK ISBN 0022866124	3.2.4.A.a., 3.2.4.A.c., 3.4.4.A.d., 3.5.4.C.c.	Q	620	***Lights and White Nights*** 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.	**atmosphere** **aurora** **horizon** **solar wind** **white night**
Machines * ISBN 0022858970 6 PK ISBN 0022866221	3.7.4.A.a., 3.7.4.A.b.	R	680	***Machines*** 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.	**compound machine** **inclined plane** **pulley** **screw** **simple machine**
Maglev Trains ISBN 0022847014 6 PK ISBN 0022864865	3.4.4.C.b., 3.6.4.C.j., 3.6.4.C.k., 3.6.4.C.l., 3.8.4.A.d.	S	680	***Maglev Trains*** explains that maglev trains work by utilizing magnetic forces. It also describes advantages and disadvantages of this technology.	**electromagnet** **guideway** **levitation** **magnet** **magnetic**
Partners in Nature ISBN 0022846816 6 PK ISBN 0022864679	3.3.4.A.a., 3.3.4.B.b.	T	700	***Partners in Nature*** 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.	**commensalism** **host** **mutualism** **parasite** **symbiosis**
Rain Forests, Coral Reefs, and Deserts ISBN 0022859411 6 PK ISBN 0022866078	3.3.4.A.c., 3.3.4.C.a., 3.8.4.A.d.	L	700	***Rain Forests, Coral Reefs, and Deserts*** describes the food chains in these ecosystems and identifies threats to these ecosystems. ways that ecosystems can be saved are also discussed.	**coral reef** **desert** **ecosystem** **food chain** **rain forest**

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TITLE	PA STANDARDS ADDRESSED	GR LEVEL	LEXILE LEVEL	BOOK SUMMARY	VOCABULARY
Rocks * ISBN 0022846867 6 PK ISBN 0022864725	3.1.4.E.a., 3.5.4.A.a., 3.5.4.A.d.	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.	**fossil** **geologist** **igneous** **metamorphic** **sedimentary**
Scientists and Cells ISBN 0022858865 6 PK ISBN 0022866027	3.1.4.B.d., 3.2.4.A.c. 3.3.4.B.a., 3.7.4.E.a. 3.7.4.E.c., 3.8.4.A.a. 3.8.4.A.c.	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.	**cell** **cell theory** **germ theory** **microscope** **theory**
Sources of Energy ISBN 0022858903 6 PK ISBN 0022866213	3.1.4.A.d., 3.2.4.D.a. 3.2.4.D.b., 3.4.4.B.a. 3.5.4.B.a., 3.8.4.A.b. 3.8.4.A.d., 3.8.4.C.a. 3.8.4.C.b.	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.	**energy** **fossil fuel** **hydropower power plant solar energy**
The GALILEO Mission to Jupiter ISBN 002285942X 6 PK ISBN 002286993X	3.2.4.A.b., 3.4.4.D.c., 3.8.4.A.c.	K	800	***The Galileo Mission to Jupiter*** describes the discoveries made by the Galileo spacecraft and highlights the role of technology in advancing science.	**asteroid astronomer mission** **outer planet** **probe**
The Grand Canyon ISBN 0022846913 6 PK ISBN 0022864768	3.2.4.A.b., 3.5.4.A.a., 3.5.4.A.d.	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.	**erosion** **fossil** **sandstone shale** **stratum**
The Story of Alloys * ISBN 0022858962 6 PK ISBN 0022866183	3.5.4.B.a., 3.8.4.A.b., 3.8.4.A.d., 3.8.4.B.b., 3.8.4.B.c.	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.	**alloy** **bronze** **property** **steel** **superalloy**

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TITLE	PA STANDARDS ADDRESSED	GR LEVEL	LEXILE LEVEL	BOOK SUMMARY	VOCABULARY
Thomas Edison ISBN 0022846956 6 PK ISBN 0022864814	3.6.4.B.a., 3.6.4.B.b. 3.6.4.B.c., 3.6.4.B.d. 3.8.4.A.b.	O	700	***Thomas Edison*** describes his life and inventions, such as the phonograph and the kinetograph. The cumulative nature of the development of technology is described.	**kinetograph** **kinetoscope patent** **phonograph** **telegraph**
What is a Platypus? * ISBN 0022846891 6 PK ISBN 002286475X	3.2.4.A.c., 3.3.4.A.a. 3.3.4.A.b., 3.3.4.B.a. 3.3.4.B.b.	R	580	***What On Earth is a Platypus?*** 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.	**gland** **kingdom** **mammal** **organ** **reptile**
What is Happening to the Beach? * ISBN 0022858911 6 PK ISBN 0022866035	3.5.4.A.a., 3.5.4.A.c., 3.8.4.A.d.	Q	700	***What is Happening to the Beach?*** describes how erosion changes beaches and ways that people can prevent beaches from eroding too quickly.	**beach** **dune** **erosion** **jetty** **seawall**
What's New on Earth? * ISBN 002285892X 6 PK ISBN 0022866051	3.2.4.B.b., 3.3.4.A.b., 3.3.4.B.a., 3.8.4.A.c.	R	650	***What's New On Earth?*** describes some recently-discovered species and explains that the majority of Earth's species have yet to be discovered.	**adaptation** **DNA** **environment** **rain forest species**
What's the Matter? * ISBN 0022858954 6 PK ISBN 0022866159	3.4.4.A.a., 3.4.4.A.b. 3.4.4.A.c., 3.5.4.B.a. 3.8.4.A.b., 3.8.4.B.b.	R	600	***What's the Matter?*** discusses matter, properties of matter, and states of matter in the context of a wide variety of sculptures.	**alloy** **bronze** **neon** **property**
Which Is Which? ISBN 0022858873 6 PK ISBN 0022866043	3.3.4.A.b., 3.3.4.C.b.	L	460	***Which is Which?*** explains how animals are classified and identifies differences between pairs of animals that are commonly confused.	**classify** **genus** **kingdom** **mammal** **species**
Why Does It Rain? ISBN 0022858881 6 PK ISBN 0022866108	3.4.4.A.c., 3.5.4.D.c., 3.5.4.D.d.	L	500	***Why Does It Rain?*** 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.	**condensation** **evaporation** **fresh water** **water cycle** **water vapor**

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Pennsylvania Academic Standards for Science and Technology

3.1.4 Unifying Themes

Pennsylvania's public schools shall teach, challenge and support every student to realize his or her maximum potential and to acquire the knowledge and skills needed to:

3.1.4.A. Know that natural and human-made objects are made up of parts.

3.1.4.A.a. • Identify and describe what parts make up a system.

3.1.4.A.b. • Identify system parts that are natural and human-made (e.g., ball point pen, simple electrical circuits, plant anatomy).

3.1.4.A.c. • Describe the purpose of analyzing systems.

3.1.4.A.d. • Know that technologies include physical technology systems (e.g., construction, manufacturing, transportation), informational systems and biochemical-related systems.

3.1.4.B. Know models as useful simplifications of objects or processes.

3.1.4.B.a. • Identify different types of models.

3.1.4.B.b. • Identify and apply models as tools for prediction and insight.

3.1.4.B.c. • Apply appropriate simple modeling tools and techniques.

3.1.4.B.d. • Identify theories that serve as models (e.g., molecules).

3.1.4.C. Illustrate patterns that regularly occur and reoccur in nature.

3.1.4.C.a. • Identify observable patterns (e.g., growth patterns in plants, crystal shapes in minerals, climate, structural patterns in bird feathers).

3.1.4.C.b. • Use knowledge of natural patterns to predict next occurrences (e.g., seasons, leaf patterns, lunar phases).

3.1.4.D. Know that scale is an important attribute of natural and human made objects, events and phenomena.

3.1.4.D.a. • Identify the use of scale as it relates to the measurement of distance, volume and mass.

3.1.4.D.b. • Describe scale as a ratio (e.g., map scales).

3.1.4.D.c. • Explain the importance of scale in producing models and apply it to a model.

3.1.4.E. Recognize change in natural and physical systems.

3.1.4.E.a. • Recognize change as fundamental to science and technology concepts.

3.1.4.E.b. • Examine and explain change by using time and measurement.

3.1.4.E.c. • Describe relative motion.

3.1.4.E.d. • Describe the change to objects caused by heat, cold, light or chemicals.

3.2.4 Inquiry and Design

Pennsylvania's public schools shall teach, challenge and support every student to realize his or her maximum potential and to acquire the knowledge and skills needed to:

3.2.4.A. Identify and use the nature of scientific and technological knowledge.

3.2.4.A.a. • Distinguish between a scientific fact and a belief.

3.2.4.A.b. • Provide clear explanations that account for observations and results.
3.2.4.A.c. • Relate how new information can change existing perceptions.
3.2.4.B. Describe objects in the world using the five senses.
3.2.4.B.a. • Recognize observational descriptors from each of the five senses (e.g., see-blue, feel-rough).
3.2.4.B.b. • Use observations to develop a descriptive vocabulary.
3.2.4.C. Recognize and use the elements of scientific inquiry to solve problems.
3.2.4.C.a. • Generate questions about objects, organisms and/or events that can be answered through scientific investigations.
3.2.4.C.b. • Design an investigation.
3.2.4.C.c. • Conduct an experiment.
3.2.4.C.d. • State a conclusion that is consistent with the information.
3.2.4.D. Recognize and use the technological design process to solve problems.
3.2.4.D.a. • Recognize and explain basic problems.
3.2.4.D.b. • Identify possible solutions and their course of action.
3.2.4.D.c. • Try a solution.
3.2.4.D.d. • Describe the solution, identify its impacts and modify if necessary.
3.2.4.D.e. • Show the steps taken and the results.

3.3.4 Biological Sciences

Pennsylvania's public schools shall teach, challenge and support every student to realize his or her maximum potential and to acquire the knowledge and skills needed to:

3.3.4.A. Know the similarities and differences of living things.
3.3.4.A.a. • Identify life processes of living things (e.g., growth, digestion, react to environment).
3.3.4.A.b. • Know that some organisms have similar external characteristics (e.g., anatomical characteristics; appendages, type of covering, body segments) and that similarities and differences are related to environmental habitat.
3.3.4.A.c. • Describe basic needs of plants and animals.
3.3.4.B. Know that living things are made up of parts that have specific functions.
3.3.4.B.a. • Identify examples of unicellular and multicellular organisms.
3.3.4.B.b. • Determine how different parts of a living thing work together to make the organism function.
3.3.4.C. Know that characteristics are inherited and, thus, offspring closely resemble their parents.
3.3.4.C.a. • Identify characteristics for animal and plant survival in different climates.
3.3.4.C.b. • identify physical characteristics that appear in both parents and offspring and differ between families, strains or species.
3.3.4.D. Identify changes in living things over time.
3.3.4.D.a. • Compare extinct life forms with living organisms.

Ecosystem Standards are in the Environment and Ecology Standard Category (4.6).

3.4.4 Physical Science, Chemistry and Physics

Pennsylvania's public schools shall teach, challenge and support every student to realize his or her maximum potential and to acquire the knowledge and skills needed to:

3.4.4.A. Recognize basic concepts about the structure and properties of matter.

- 3.4.4.A.a. Describe properties of matter (e.g., hardness, reactions to simple chemical tests).
- 3.4.4.A.b. Know that combining two or more substances can make new materials with different properties.
- 3.4.4.A.c. Know different material characteristics (e.g., texture, state of matter, solubility).

3.4.4.B. Know basic energy types, sources and conversions.

- 3.4.4.B.a. Identify energy forms and examples (e.g., sunlight, heat, stored, motion).
- 3.4.4.B.b. Know the concept of the flow of energy by measuring flow through an object or system.
- 3.4.4.B.c. Describe static electricity in terms of attraction, repulsion and sparks.
- 3.4.4.B.d. Apply knowledge of the basic electrical circuits to design and construction simple direct current circuits.
- 3.4.4.B.e. Classify materials as conductors and nonconductors.
- 3.4.4.B.f. Know and demonstrate the basic properties of heat by producing it in a variety of ways.
- 3.4.4.B.g. Know the characteristics of light (e.g., reflection, refraction, absorption) and use them to produce heat, color or a virtual image.

3.4.4.C. Observe and describe different types of force and motion.

- 3.4.4.C.a. Identify characteristics of sound (pitch, loudness and echoes)
- 3.4.4.C.b. Recognize forces that attract or repel other objects and demonstrate them.
- 3.4.4.C.c. Describe various types of motions.
- 3.4.4.C.d. Compare the relative movement of objects and describe types of motion that are evident.
- 3.4.4.C.e. Describe the position of an object by locating it relative to another object or the background (e.g., geographic direction, left, up).

3.4.4.D. Describe the composition and structure of the universe and the earth's place in it.

- 3.4.4.D.a. Recognize earth's place in the solar system.
- 3.4.4.D.b. Explain and illustrate the causes of seasonal changes.
- 3.4.4.D.c. Identify planets in our solar system and their general characteristics.
- 3.4.4.D.d. Describe the solar system motions and use them to explain time (e.g., days, seasons), major lunar phases and eclipses.

Refer to Technology Standard Category 3.6 for applied uses of these concepts and principles.

3.5.4 Earth Sciences

Pennsylvania's public schools shall teach, challenge and support every student to realize his or her maximum potential and to acquire the knowledge and skills needed to:

3.5.4.A. Know basic landforms and earth history.

- 3.5.4.A.a. Describe earth processes (e.g., rusting, weathering, erosion) that have affected selected physical features in students' neighborhoods.

3.5.4.A.b. • Identify various earth structures (e.g., mountains, faults, drainage basins) through the use of models.
3.5.4.A.c. • Identify the composition of soil as weathered rock and decomposed organic remains.
3.5.4.A.d. • Describe fossils and the type of environment they lived in (e.g., tropical, aquatic, desert).
3.5.4.B. Know types and uses of earth materials.
3.5.4.B.a. • Identify uses of various earth materials (e.g., buildings, highways, fuels, growing plants).
3.5.4.B.b. • Identify and sort earth materials according to a classification key (e.g., soil/rock type).
3.5.4.C. Know basic weather elements.
3.5.4.C.a. • identify cloud types.
3.5.4.C.b. • Identify weather patterns from data charts (including temperature, wind direction and speed, precipitation) and graphs of the data.
3.5.4.C.c. • Explain how the different seasons effect plants, animals, food availability and daily human life.
3.5.4.D. Recognize the earth's different water resources.
3.5.4.D.a. • Know that approximately three-fourths of the earth is covered by water.
3.5.4.D.b. • identify and describe types of fresh and salt-water bodies.
3.5.4.D.c. • Identify examples of water in the form of solid, liquid and gas on or near the surface of the earth.
3.5.4.D.d. • Explain and illustrate evaporation and condensation.
3.5.4.D.e. • Recognize other resources available from water (e.g., energy, transportation, minerals, food).

Refer to Environment and Ecology Standards Categories 4.1, 4.3, 4.8 for standards that deal with environmental impact of Earth structures and forces.

3.6.4 Technology Education

Pennsylvania's public schools shall teach, challenge and support every student to realize his or her maximum potential and to acquire the knowledge and skills needed to:

3.6.4.A. Know that biotechnologies relate to propagating, growing, maintaining, adapting, treating and converting.
3.6.4.A.a. • Identify agricultural and industrial production processes that involve plants and animals.
3.6.4.A.b. • Identify waste management treatment processes.
3.6.4.A.c. • Describe how knowledge of the human body influences or impacts ergonomic design.
3.6.4.A.d. • Describe how biotechnology has impacted various aspects of daily life (e.g., health care, agriculture, waste treatment).
3.6.4.B. Know that information technologies involve encoding, transmitting, receiving, storing, retrieving and decoding.
3.6.4.B.a. • Identify electronic communication methods that exist in the community (e.g., digital cameras, telephone, internet, television, fiber optics).
3.6.4.B.b. • Identify graphic reproduction methods.
3.6.4.B.c. • Describe appropriate image generating techniques (e.g., photography, video).
3.6.4.B.d. • Demonstrate the ability to communicate an idea by applying basic sketching and drawing techniques.
3.6.4.C. Know physical technologies of structural design, analysis and engineering, finance, production, marketing, research and design.
3.6.4.C.a. • Identify and group a variety of construction tasks.
3.6.4.C.b. • Identify the major construction systems present in a specific local building.

3.6.4.C.c. • Identify specific construction systems that depend on each other in order to complete a project.
3.6.4.C.d. • Know skills used in construction.
3.6.4.C.e. • Identify examples of manufactured goods present in the home and school.
3.6.4.C.f. • Identify basic resources needed to produce a manufactured item.
3.6.4.C.g. • Identify basic component operations in a specific manufacturing enterprise (e.g., cutting, shaping, attaching).
3.6.4.C.h. • Identify waste and pollution resulting from a manufacturing enterprise.
3.6.4.C.i. • Explain and demonstrate the concept of manufacturing (e.g., assemble a set of papers or ball point pens sequentially, mass produce an object).
3.6.4.C.j. • Identify transportation technologies of propelling, structuring, suspending, guiding, controlling and supporting.
3.6.4.C.k. • Identify and experiment with simple machines used in transportation systems.
3.6.4.C.l. • Explain how improved transportation systems have changed society.

3.7.4 Technological Devices

Pennsylvania's public schools shall teach, challenge and support every student to realize his or her maximum potential and to acquire the knowledge and skills needed to:

3.7.4.A. Explore the use of basic tools, simple materials and techniques to safely solve problems.
3.7.4.A.a. • Describe the scientific principles on which various tools are based.
3.7.4.A.b. • Group tools and machines by their function.
3.7.4.A.c. • Select and safely apply appropriate tools and materials to solve simple problems.
3.7.4.B Select appropriate instruments to study materials.
3.7.4.Ba. • Develop simple skills to measure, record, cut and fasten.
3.7.4.Bb. • Explain appropriate instrument selection for specific tasks.

Computer literacy, including the use of hardware and software in standard statements C, D, and E, should be integrated across all content areas.

3.7.4.C. Identify basic computer operations and concepts.
3.7.4.C.a. • Identify the major parts necessary for a computer to input and output data.
3.7.4.C.b. • Explain and demonstrate the basic use of input and output devices (e.g., keyboard, monitor, printer, mouse).
3.7.4.C.c. • Explain and demonstrate the use of external and internal storage devices (e.g., disk drive, CD drive).
3.7.4.D. Use basic computer software.
3.7.4.D.a. • Apply operating system skills to perform basic computer tasks.
3.7.4.D.b. • Apply basic word processing skills.
3.7.4.D.c. • Identify and use simple graphic and presentation graphic materials generated by the computer.
3.7.4.D.d. • Apply specific instructional software.
3.7.4.E. Identify basic computer communications systems.
3.7.4.E.a. • Apply a web browser.

3.7.4.E.b. • Apply basic electronic mail functions.

3.7.4.E.c. • Use on-line searches to answer age appropriate questions.

3.8.4 Science, Technology and Human Endeavors

Pennsylvania's public schools shall teach, challenge and support every student to realize his or her maximum potential and to acquire the knowledge and skills needed to:

3.8.4.A. Know that people select, create and use science and technology and that they are limited by social and physical restraints.

3.8.4.A.a. • Identify and describe positive and negative impacts that influence or result from new tools and techniques.

3.8.4.A.b. • Identify how physical technology (e.g., construction, manufacturing, transportation), informational technology and biotechnology are used to meet human needs.

3.8.4.A.c. • Describe how scientific discoveries and technological advancements are related.

3.8.4.A.d. • Identify interrelationships among technology, people and their world.

3.8.4.A.e. • Apply the technological design process to solve a simple problem.

3.8.4.B. Know how human ingenuity and technological resources satisfy specific human needs and improve the quality of life.

3.8.4.B.a. • Identify and distinguish between human needs and improving the quality of life.

3.8.4.B.b. • Identify and distinguish between natural and human-made resources.

3.8.4.B.c. • Describe a technological invention and the resources that were used to develop it.

3.8.4.C. Know the pros and cons of possible solutions to scientific and technological problems in society.

3.8.4.C.a. • Compare the positive and negative expected and unexpected impacts of technological change.

3.8.4.C.b. • Identify and discuss examples of technological change in the community that have both positive and negative impacts.