

Investigating Earth Systems Correlation to Pennsylvania Grade 7 Academic Standards for Science and Technology

Correlation Key “XX” In-depth Coverage = In-depth coverage in Student Edition. "X" = Coverage in Student Edition and/or Teacher Edition support the development.	Climate and Weather	Our Dynamic Planet	Energy Resources	Fossils	Materials and Minerals	Oceans	Rocks and Landforms	Soil	Water as a Resource
3.1 Unifying Themes									
3.1.7 Grade 7									
A. Explain the part of a simple system and their relationship to each other.									
Describe a system as a group of related parts that work together to achieve a desired result (e.g., digestive system).	XX	XX	XX	XX	XX	XX	XX	XX	XX
Explain the importance of order in a system.	X	X	X	X	X	X	XX	X	X
Distinguish between system inputs, system processes and system outputs.	X	X	X	X	X	X	X	X	X
Distinguish between open loop and closed loop systems.	XX	X	X	X	X	XX	XX	X	XX
Apply systems analysis to solve problems.	XX	XX	XX	XX	XX	XX	XX	XX	XX
B. Describe the use of models as an application of scientific or technological concepts.									
Identify and describe different types of models and their functions.	XX	XX	X	X	X	X	X	X	X
Apply models to predict specific results and observations (e.g., population growth, effects of infectious organisms).	XX	XX	XX	XX	XX	XX	XX	XX	XX
Explain systems by outlining a system’s relevant parts and its purpose and/or designing a model that illustrates its function.	XX	X	XX	X	X	X	X	X	XX
C. Identify patterns as repeated processes or recurring elements in science and technology.									
Identify different forms of patterns and use them to group and classify specific objects.	XX	XX	XX	X	XX	XX	XX	X	XX
Identify repeating structure patterns.	XX	XX	X	X	XX	X	X	X	X
Identify and describe patterns that occur in physical systems (e.g., construction, manufacturing, transportation) informational systems and biochemical-related systems.	XX	XX	XX		XX	XX	XX	XX	
D. Explain scale as a way of relating concepts and ideas to one another by some measure.									
Apply various applications of size and dimensions of scale to scientific, mathematical, and technological applications.	X	X	X	XX	X	X	X	X	X
Describe scale as a form of ratio and apply to a life situation.		X	X	XX		X	X		X
E. Identify change as a variable in describing natural and physical systems.									
Describe fundamental science and technology concepts that could solve practical problems.	XX	XX	XX	XX	XX	XX	XX	XX	XX
Explain how ratio is used to describe change.	X		X	X	X			X	
Describe the effect of making a change in one part of a system on the system as a whole.	XX	XX	XX	XX	XX	XX	XX	XX	XX

Investigating Earth Systems Correlation to Pennsylvania Grade 7 Academic Standards for Science and Technology

Correlation Key “XX” In-depth Coverage = In-depth coverage in Student Edition. "X" = Coverage in Student Edition and/or Teacher Edition support the development.	Climate and Weather	Our Dynamic Planet	Energy Resources	Fossils	Materials and Minerals	Oceans	Rocks and Landforms	Soil	Water as a Resource
3.2 Inquiry and Design									
3.2.7 Grade 7									
A. Explain and apply scientific and technological knowledge.									
Distinguish between a scientific theory and a belief.						X			
Answer “What If” questions based on observations, inference, or prior knowledge or experience.	XX	XX	XX	XX	XX	XX	XX	XX	XX
Explain how skepticism about an accepted scientific explanation can lead to a new understanding.	X	X		X		X			
Explain how new information may change existing theories and practice.	X	XX	XX	X	XX	X	X	X	X
B. Apply process knowledge to make and interpret observations.									
Measure materials using a variety of scales.	X	X	X	XX	X	X	X	XX	XX
Describe relationships by making inferences and predictions.	XX	XX	XX	XX	XX	XX	XX	XX	XX
Communicate, use space/time relationships, define operationally, raise questions, formulate hypotheses, test and experiment.	XX	XX	XX	XX	XX	XX	XX	XX	XX
Design controlled experiments, recognize variable, and manipulate variables.	XX	XX	XX	XX	XX	XX	XX	XX	XX
Interpret data, formulate models, design models, and produce solutions.	XX	XX	XX	XX	XX	XX	XX	XX	XX
C. Identify and use the elements of scientific inquiry to solve problems.									
Generate questions about objects, organisms and/or events that can be answered through scientific investigations.	XX	XX	XX	XX	XX	XX	XX	XX	XX
Evaluate the appropriateness of questions.	XX	XX	XX	XX	XX	XX	XX	XX	XX
Design an investigation with limited variables to investigate a question.	XX	XX	XX	XX	XX	XX	XX	XX	XX
Conduct a two-part experiment.	X	X		X	XX		X	X	
Judge the significance of experimental information in answering the question.	XX	XX	XX	XX	XX	XX	XX	XX	XX
Communicate appropriate conclusions from the experiment.	XX	XX	XX	XX	XX	XX	XX	XX	XX
D. Know and use the technological design process to solve problems.									
Define different types of problems.	XX	XX	XX	XX	XX	XX	XX	XX	XX
Define all aspects of the problem, necessary information and questions that must be answered.	XX	X	X	XX	XX	XX	XX	XX	XX
Propose the best solution.	XX	X	X		XX	XX	XX	XX	XX
Design and propose alternative methods to achieve solutions.	XX	X	X		XX	XX	XX	XX	XX
Apply a solution.	XX	X	X		XX	XX	XX	XX	XX
Explain the results, present improvements. Identify and infer the impacts of the solution.	XX	X	X		XX	XX	XX	XX	XX

Investigating Earth Systems Correlation to Pennsylvania Grade 7 Academic Standards for Science and Technology

Correlation Key “XX” In-depth Coverage = In-depth coverage in Student Edition. "X" = Coverage in Student Edition and/or Teacher Edition support the development.	Climate and Weather	Our Dynamic Planet	Energy Resources	Fossils	Materials and Minerals	Oceans	Rocks and Landforms	Soil	Water as a Resource
3.5 Earth Sciences									
3.5.7 Grade 7									
A. Describe Earth feature and processes									
Describe major layers of the Earth.		XX				XX			
Describe the processes involved in the creations of geologic features (e.g., folding, faulting, volcanism, sedimentation) and that these processes seen today (e.g., erosion, weathering, crustal plate movement) are similar to those in the past.		XX				XX	XX		
Describe the processes that formed Pennsylvania geologic structures and resources including mountains, glacial formations, water gaps and ridges.		XX					XX		X
Explain how the rock cycle affected rock formations in the state of Pennsylvania.		X		X			XX	X	
Distinguish between examples of rapid surface changes (e.g., landslides, earthquakes) and slow surface changes (e.g., weathering).		X					XX	XX	
Identify living plants and animals that are similar to fossil forms.				XX					
B. Recognize Earth resources and how they affect everyday life.									
Identify and locate significant Earth resources (e.g., rock types, oil, gas, coal deposits) in Pennsylvania.			XX		X		X		XX
Explain the processes involved in the formation of oil and coal in Pennsylvania.			XX						
Explain the value and uses of different Earth resources (e.g., selected minerals, ores, fuel sources, agricultural uses).			XX		XX				X
Compare the locations of human settlements as related to available resources.			X		X				X
C. Describe basic elements of meteorology.									
Explain weather forecasts by interpreting weather data and symbols.	XX								
Explain oceans’ impact on local weather and the climate of a region.	X					XX			
Identify how cloud types, wind direction and barometric pressure changes are associated with weather patterns in different regions of the country.	XX								
Explain and illustrate the processes of cloud formation and precipitation.	XX								
Describe and illustrate the major layers of the Earth’s atmosphere.	X								
Identify different air masses and global wind patterns and how they relate to the weather patterns in different regions of the U.S.	XX								

Investigating Earth Systems Correlation to Pennsylvania Grade 7 Academic Standards for Science and Technology

Correlation Key “XX” In-depth Coverage = In-depth coverage in Student Edition. "X" = Coverage in Student Edition and/or Teacher Edition support the development.	Climate and Weather	Our Dynamic Planet	Energy Resources	Fossils	Materials and Minerals	Oceans	Rocks and Landforms	Soil	Water as a Resource
D. Explain the behavior and impact of the Earth’s water system.									
Explain the water cycle using the processes of evaporation and condensation.	XX								XX
Describe factors that affect evaporation and condensation.	XX								XX
Distinguish salt from fresh water (e.g., density, electrical conduction).						XX			
Compare the effect of water type (e.g., polluted, fresh, salt water) and the life contained in them.						XX			X
Identify ocean and shoreline features (e.g., bays, inlets, spit, tidal marshes).				X		X	XX		
3.7 Technological Devices									
3.7.7 Grade 7									
A. Describe the safe and appropriate use of tools, materials and techniques to answer questions and solve problems.									
Identify uses of tools, machines, materials, information, people, money, energy and time that meet specific design criteria.	X	X	X	X	XX	X	X	X	X
Describe safe procedures for using tools and materials.	X	X	X	X	XX	X	X	X	X
Assess materials for appropriateness of use.	X	X	X	X	XX	X	X	X	X
B. Use appropriate instruments and apparatus to study materials.									
Select appropriate instruments to measure the size, weight, shape and temperature of living and non-living objects.	XX	XX	XX	XX	XX	XX	XX	XX	XX
Apply knowledge of different measurement systems to measure and record objects’ properties.	XX	XX	XX	XX	XX	XX	XX	XX	XX
C. Explain and demonstrate basic computer operations and concepts.									
Know specialized computer applications used in the community.	XX	X	X	X	X	X	X	X	X
Describe the function of advanced input and output devices (e.g., scanners, video images, plotters, projectors) and demonstrate their use.	X	X	X	X	X	X	X	X	X
Demonstrate age appropriate keyboarding skills and techniques.	X	X	X	X	X	X	X	X	X
D. Apply computer software to solve specific problems.									
Identify software designed to meet specific needs (e.g., Computer Aided Drafting, design software, tutorial, financial, presentation software).	X	X	X	X	X	X	X	X	X
Identify and solve basic software problems relevant to specific software applications.									
Identify basic multimedia applications.									
Demonstrate a basic knowledge of desktop publishing applications.	X	X	X	X	X	X	X	X	X
Apply intermediate skills in utilizing word processing, database and spreadsheet software.	X	X	X	X	X	X	X	X	X

Investigating Earth Systems Correlation to Pennsylvania Grade 7 Academic Standards for Science and Technology

Correlation Key “XX” In-depth Coverage = In-depth coverage in Student Edition. "X" = Coverage in Student Edition and/or Teacher Edition support the development.	Climate and Weather	Our Dynamic Planet	Energy Resources	Fossils	Materials and Minerals	Oceans	Rocks and Landforms	Soil	Water as a Resource
Apply basic graphic manipulation techniques.	X	X	X	X	X	X	X	X	X
E. Explain basic computer communications systems.									
Describe the organization and functions of the basic parts that make up the World Wide Web.	X	X	X	X	X	X	X	X	X
Apply advanced electronic mail functions.					X				
Apply basic on-line research techniques to solve a specific problem.	X	X	X	X	X	X	X	X	X

Investigating Earth Systems Correlation to Pennsylvania Grade 7 Academic Standards for Science and Technology

Correlation Key “XX” In-depth Coverage = In-depth coverage in Student Edition. "X" = Coverage in Student Edition and/or Teacher Edition support the development.	Climate and Weather	Our Dynamic Planet	Energy Resources	Fossils	Materials and Minerals	Oceans	Rocks and Landforms	Soil	Water as a Resource
3.8 Science, Technology and Human Endeavors 3.8.7 Grade 7 A. Explain how sciences and technologies are limited in their effects and influences on society.									
Identify and describe the unavoidable constraints of technological design.			XX		XX				
Identify changes in society as a result of a technological development.	XX	XX	XX		XX	X			XX
Identify and explain improvements in transportation, health, sanitation and communications as a result of advancements in science and technology and how they effect our lives.			X		X				XX
B. Explain how human ingenuity and technological resources satisfy specific human needs and improve the quality of life.									
Identify interrelationships between systems and resources.			XX		XX			XX	XX
Identify and describe the resources necessary to solve a selected problem in a community and improve the quality of life.	X		X		X				X
Identify and explain specific examples of how agricultural science has met human needs and has improved the quality of life.								X	
C. Identify the pros and cons of applying technological and scientific solutions to address problems and the effect upon society.									
Describe the positive and negative expected and unexpected effects of specific technological developments.	X		X		XX		X		
Describe ways technology extends and enhances human abilities.	X				XX		X	X	