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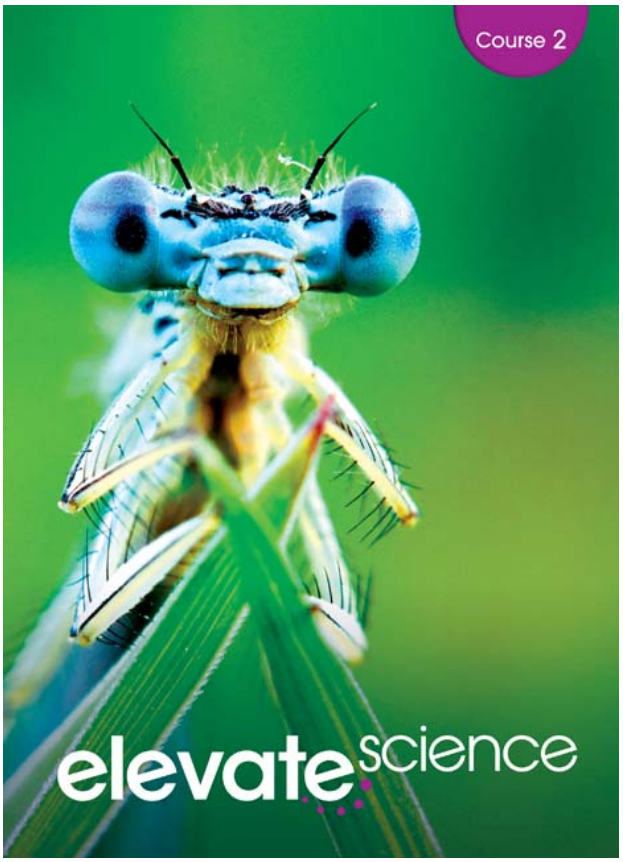

To the

Massachusetts Science and Technology Engineering Standards Grade 7

Pearson

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Introduction

This document demonstrates how ***Elevate Science ©2019*** supports the Massachusetts Science and Technology/Engineering Standards, Grade 7. Correlation page references are to the Student and Teacher's Editions and cited at the page level.

Pearson is proud to introduce ***Elevate Science*** Middle Grades – where exploration is the heart of science! Designed to address the rigors of new science standards, students will experience science up close and personal, using real-world, relevant phenomena to solve project-based problems. Our newest program prepares students for the challenges of tomorrow, building strong reasoning skills and critical thinking strategies as they engage in explorations, formulate claims, and gather and analyze data that promote evidence-based arguments. The blended print and digital curriculum covers all Next Generation Science Standards at every grade level.

Elevate Science helps teachers transform learning, promote innovation, and manage their classroom.

Transform science classrooms by immersing students in active, three-dimensional learning.
Elevate Science engages students with real-world tasks, open-ended Quests, uDemonstrate performance-based labs, and in the engineering/design process with uEngineer It! investigations.

- A new 3-D learning model enhances best practices.
- Engineering-focused features infuse STEM learning.
- Phenomena-based activities put students at the heart of a Quest for knowledge.

Innovate learning by focusing on 21st century skills.
Students are encouraged to think, collaborate, and innovate! With ***Elevate Science***, students explore STEM careers, experience engineering activities, and discover our scientific and technological world. The content, strategies, and resources of Elevate Science equip the science classroom for scientific inquiry and science and engineering practices.

- Problem-based learning Quests put students on a journey of discovery.
- STEM connections help integrate curriculum.
- Coding and innovation engage students and build 21st century skills.

Manage the classroom with confidence.
Teachers will lead their class in asking questions and engaging in argumentation. Evidence-based assessments provide new options for monitoring student understanding.

- Professional development offers practical point-of-use support.
- Embedded standards in the program allow for easy integration.
- ELL and differentiated instruction strategies help instructors reach every learner.
- Interdisciplinary connections relate science to other subjects.

Designed for today's classroom, preparing students for tomorrow's world. ***Elevate Science*** promises to:

- Elevate thinking.
- Elevate learning.
- Elevate teaching.

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Massachusetts Science and Technology Engineering Standards, Grade 7		**Elevate Science Course 2, ©2019**
7.MS-ESS	**Earth and Space Sciences**	
7.MS-ESS2	Earth's Systems	
7.MS-ESS2-2	Construct an explanation based on evidence for how Earth's surface has changed over scales that range from local to global in size.	**SE/TE:** This standard is addressed in Elevate Science, Course 1, Topic 9, Earth's Surface Systems, Topics 1-4: • Weathering and Soil • Erosion and Deposition • Water Erosion • Glacial and Wave Erosion
7.MS-ESS2-4	Develop a model to explain how the energy of the Sun and Earth's gravity drive the cycling of water, including changes of state, as it moves through multiple pathways in Earth's hydrosphere.	**SE/TE:** Hands-On Lab, 217 The Water Cycle, 217 See also Elevate Science, Course 1, Topic 5, Introduction to the Earth's Systems, Lesson 1, Matter and Energy in the Earth's System.
7.MS-ESS3	Earth and Human Activity	
7.MS-ESS3-2	Obtain and communicate information on how data from past geologic events are analyzed for patterns and used to forecast the location and likelihood of future catastrophic events.	**SE/TE:** This standard is addressed in Elevate Science, Course 1, Topic 9, Earth's Surface Systems.

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7.MS-ESS3-4	Construct an argument supported by evidence that human activities and technologies can mitigate the impact of increases in human population and per capita consumption of natural resources on the environment.	**SE/TE:** Reducing Fossil Fuel Usage, 301 Impact on the Earth System, 343 Balancing Needs, 344 Lesson 1 Check, 345 Connect It!, 346 Acid Rain, 350 Controlling Air Pollution, 352-353 Lesson 2 Check, 354 Sustainable Forestry, 366 Lesson 3 Check, 367 CaeStudy: Nothing Goes to Waste, 368-369 Plan It!: Long-Distance Space Travel, 377 Lesson 4 Check, 377 Topic 7 Review and Assess, 380-381 Evidence-Based Assessment, 382-383 uDemonstrate Lab: Washing Away, 384-387
7.MS-LS	**Life Science**	
7.MS-LS1	From Molecules to Organisms: Structures and Processes	
7.MS-LS1-4	Construct an explanation based on evidence for how characteristic animal behaviors and specialized plant structures increase the probability of successful reproduction of animals and plants.	**SE/TE:** Mating Behaviors, 162-163 Reproductive Strategies, 164-167 Math Toolbox, 165 Cooperative Behaviors, 166 Lesson 2 Check, 168 Extraordinary Science: Avian Artists, 169

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7.MS-LS2	Ecosystems: Interactions, Energy, and Dynamics	
7.MS-LS2-1	Analyze and interpret data to provide evidence for the effects of periods of abundant and scarce resources on the growth of organisms and the size of populations in an ecosystem.	**SE/TE:** Math Toolbox: Graphing Population Changes, 198 Lesson 1 Check, 201 Case Study: The Case of the Disappearing Cerulean Warbler, 202-203 Math Toolbox: Dependent and Independent Variables, 221 Math Toolbox: Predator-Prey Interactions, 241 Population Size, 241 Evidence-Based Assessment, 280-281 uDemonstrate Lab: Changes in an Ecosystem, 282-285
7.MS-LS2-2	Describe how relationships among and between organisms in an ecosystem can be competitive, predatory, parasitic, and mutually beneficial and that these interactions are found across multiple ecosystems.	**SE/TE:** Adaptations and Survival, 237-238 Competition, 239 Competition and Predation, 239-241 Predation, 240 Mutualism, 242-243 Symbiotic Relationships, 242-244 Parasitism, 244 Lesson 1 Check, 245 Case Study: The Dependable Elephant, 266-267
7.MS-LS2-3	Develop a model to describe that matter and energy are transferred among living and nonliving parts of an ecosystem and that both matter and energy are conserved through these processes.	**SE/TE:** Interactivity, 206 Hands-On Lab, 207 Energy and Matter Transfer, 208 Model It!, 209 Math Toolbox, 211 Connect It!, 214 Conservation of Matter and Energy, 215

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7.MS-LS2-4	Analyze data to provide evidence that disruptions (natural or human-made) to any physical or biological component of an ecosystem can lead to shifts in all its populations.	**SE/TE:** Math Toolbox: Graphing Population Changes, 198 Populations, 198-199 Lesson 1 Check , 201 Case Study: The Case of the Cerulean Warbler, 202-203 Math Toolbox: Predator-Prey Interactions, 241 Math Toolbox: Room to Roam, 260 Quest Check-In, 265 Evidence-Based Assessment, 280-281
7.MS-LS2-5	Evaluate competing design solutions for protecting an ecosystem. Discuss benefits and limitations of each design.	**SE/TE:** Quest Check-In, 234 Quest Check-In, 252 Quest Check-In, 265 Quest Findings, 281 uEngineer It! Electromagnetism in Action, 479 Hands-On Lab, 489 uDemonstrate Lab: Over and Out, 540-543
7.MS-LS2-6(MA)	Explain how changes to the biodiversity of an ecosystem—the variety of species found in the ecosystem—may limit the availability of resources humans use.	**SE/TE:** The Value of Biodiversity, 255-257 Economic Value, 256 Ecological Value, 257 Protecting Biodiversity, 263 Ecosystem Services, 269-272 Factors Impacting Ecosystem Services, 273-274 Human Activities, 274 Conservation, 275 Protection, 275 Lesson 4 Check, 276 Using Natural Resources, 342-343

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7.MS-PS	**Physical Science**	
7.MS-PS2	Motion and Stability: Forces and Interactions	
7.MS-PS2-3	Analyze data to describe the effect of distance and magnitude of electric charge on the strength of electric forces.	**SE/TE:** Electric Force, Fields, and Energy, 455-457 Electric Field Lines, Figure 3, 456 uEngineer It!: Electromagnetism In Action, 479
7.MS-PS2-5	Use scientific evidence to argue that fields exist between objects with mass, between magnetic objects, and between electrically charged objects that exert force on each other even though the objects are not in contact.	**SE/TE:** Quest Kick-Off, 452 Electric Force, Fields, and Energy, 455-457 Electric Fields, 456 Electric Force, 456 Quest Check-In, 462 Extraordinary Science: Bumblebees and Electric Flowers, 463 Magnetic Force and Energy, 465-466 Magnetic Force, 466 Lesson 2 Check, 471 uEngineer It! Electromagnetism in Action , 479
7.MS-PS3	Energy	
7.MS-PS3-1	Construct and interpret data and graphs to describe the relationships among kinetic energy, mass, and speed of an object.	This standard is addressed in Elevate Science, Course 1, Topic 3 Energy, Lesson 2.
7.MS-PS3-2	Develop a model to describe the relationship between the relative position of objects interacting at a distance and their relative potential energy in the system.	**SE/TE:** Question It!, 457 Interactivity, 461 Potential Energy, Figure 2, 506 See also Elevate Science, Course 1, Topic 3 Energy, Lesson 2.

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7.MS-PS3-4	Conduct an investigation to determine the relationships among the energy transferred, how well the type of matter retains or radiates heat, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample.	**SE/TE:** This standard is addressed in Elevate Science, Course 1, Topic 4 Thermal Energy, Lessons 1- 3. • Thermal Energy, Heat, and Temperature • Heat Transfer • Heat and Materials
7.MS-PS3-5	Present evidence to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.	**SE/TE:** This standard is addressed in Elevate Science, Course 1, Topic 3 Energy, Lesson 2, Kinetic Energy and Potential Energy.
7.MS-PS3-6(MA)	Use a model to explain how thermal energy is transferred out of hotter regions or objects and into colder ones by convection, conduction, and radiation.	**SE/TE:** This standard is addressed in Elevate Science, Course 1, Topic 4 Thermal Energy, Lessons 2- 3. • Heat Transfer • Heat and Materials
7.MS-PS3-7(MA)	Use informational text to describe the relationship between kinetic and potential energy and illustrate conversions from one form to another.	**SE/TE:** See Elevate Science, Course 1, Topic 3 Energy, Lesson 2, Kinetic Energy and Potential Energy.

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7.MS-ETS	**Technology/Engineering**	
7.MS-ETS1	Engineering Design	
7.MS-ETS1-2	Evaluate competing solutions to a given design problem using a decision matrix to determine how well each meets the criteria and constraints of the problem. Use a model of each solution to evaluate how variations in one or more design features, including size, shape, weight, or cost, may affect the function or effectiveness of the solution.	**SE/TE:** uEngineer It!: An Artificial Leaf, 49 uEngineer It! Electromagnetism in Action , 479 Quest Check-In, 489 uEngineer It!: A Life-Saving Mistake, 513 uDemonstrate Lab: Over and Out, 540-543
7.MS-ETS1-4	Generate and analyze data from iterative testing and modification of a proposed object, tool, or process to optimize the object, tool, or process for its intended purpose.	**SE/TE:** Quest Check-In, 489 uEngineer It!: A Life-Saving Mistake, 513
7.MS-ETS1-7(MA)	Construct a prototype of a solution to a given design problem.	**SE/TE:** uEngineer It!: An Artificial Leaf, 49 uDemonstrate Lab: Design and Build a Microscope, 64-65 uEngineer It!: Artificial Skin, 81 uEngineer It!: Gardening in Space, 159 uEngineer It!: From Bulldozers to Biomes, 277 uEngineer It!: Micro-Hydro Power, 307 uDemonstrate Lab: Making Waves, 446-447 uEngineer It!: Electromagnetism In Action, 479 uDemonstrate Lab: Planetary Detective, 496-497 uDemonstrate Lab: Over and Out, 540-541

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7.MS-ETS3	**Technological Systems**	
7.MS-ETS3-1(MA)	Explain the function of a communication system and the role of its components, including a source, encoder, transmitter, receiver, decoder, and storage.	**SE/TE:** Transmitting Signals, 521-522 Case Study: Super Ultra High Definition, 524-525 Roger That!, 530-531 Extraordinary Science: Beam Me Up!, 535 uDemonstrate Lab: Over and Out, 540-541
7.MS-ETS3-2(MA)	Compare the benefits and drawbacks of different communication systems.	**SE/TE:** Quest Check-In, 523 Math Toolbox: Digital Data Explosion, 529 Roger That!, 530-531 Quest Findings: How can you lift an object without making contact?, 539
7.MS-ETS3-3(MA)	Research and communicate information about how transportation systems are designed to move people and goods using a variety of vehicles and devices. Identify and describe subsystems of a transportation vehicle, including structural, propulsion, guidance, suspension, and control subsystems.	**SE/TE:** Supporting content: Quest Kick-Off, 452 TE Only: Differentiated Instruction , 453 Supporting content: uEngineer It! Electromagnetism in Action , 479
7.MS-ETS3-4(MA)	Show how the components of a structural system work together to serve a structural function. Provide examples of physical structures and relate their design to their intended use.	**SE/TE:** uEngineer It!: From Wastewater to Tap Water, 379 uEngineer It!: Say Cheese!, 411 Evidence-Based Assessment, 444-445 uDemonstrate Lab: Planetary Detective, 496-499
7.MS-ETS3-5(MA)	Use the concept of systems engineering to model inputs, processes, outputs, and feedback among components of a transportation, structural, or communication system.	**SE/TE:** Quest Kick-Off: How can you design a system to stop a thief?, 390 Quest Findings, 445 uDemonstrate Lab: Making Waves, 446-448 uDemonstrate Lab: Over and Out, 540-543