

A Correlation of
Elevate Science
Grades 5 - 8, ©2019



To the
Pennsylvania Assessment Anchors
for Science
Grades 5-8

**A Correlation of Elevate Science ©2019, Grade 5 and Integrated Courses 1-3
to the
Pennsylvania Assessment Anchors for Science, Grades 5-8**

Introduction

This document demonstrates how **Elevate Science ©2019** meets the Nevada Academic Content Standards for Science, Middle School Pennsylvania Assessment Anchors for Science, Grades 5-8. Correlation page references are to the Student and Teacher's Editions and cited at the page level.

Savvas 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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3.1.7 Unifying Themes	
3.1.7.A Explain the parts of a simple system and their relationship to each other.	
3.1.7.A.1 Describe a system as a group of related parts that work together to achieve a desired result (e.g., digestive system).	<p>Grade 5 SE/TE: Earth's Systems, 104 Crosscutting Concepts Toolbox: Scale, 215 Sports Connection, 360 Investigate Lab: How do the parts of an ecosystem work together?, 361 Crosscutting Concepts Toolbox: Systems, 370</p> <p>Grade 6 SE/TE: The Essential Question, 175 The Earth System, 179</p> <p>Grade 7 SE/TE: Quest Connection, 72 Organization of the Body, 73 Levels of Organization, 74-75 Human Organ Systems, 76-79 Lesson 1 Check, 80 Systems Working Together, 83-87 Lesson 2 Check, 91 The Digestive Process, 98-99 The Lower Digestive Process, 100-103 Nervous System, 119-123 Endocrine System, 124-126 Evidence-Based Assessment, 130-131</p> <p>Grade 8 SE/TE: Understanding the Solar System, 473 Star Systems, 508</p>

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3.1.7.A.2 Explain the importance of order in a system.	<p>Grade 5 SE/TE: Earth's Systems, 104</p> <p>Grade 6 SE/TE: Model It!, 182 Lesson 1 Check, 184</p> <p>Grade 7 SE/TE: Homeostasis, 88-90 Lesson 2 Check, 91 The Digestive Process, 98-99 The Lower Digestive Process, 100-103 Lesson 3 Check, 104 Nervous System, 119-123 Endocrine System, 124-126 Lesson 5 Check, 127 Review and Assess, 128</p> <p>Grade 8 SE/TE: Understanding the Solar System, 473 Hands-on Lab, 475 The Solar System, Figure 7, 480-481 Lesson 1 Check, 483</p>
3.1.7.A.3 Distinguish between system inputs, system processes and system outputs.	<p>Grade 5 TE: uEngineer It!, 336-337</p>
3.1.7.A.4 Distinguish between open loop and closed loop systems.	<p>Grade 5 SE/TE: Crosscutting Concepts Toolbox: Energy and Matter, 330</p> <p>Grade 7 SE/TE: Parts of a Circuit, 505-507</p> <p>Grade 8 SE/TE: Quest Check-In, 97</p>

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<p>3.1.7.A.5 Apply systems analysis to solve problems.</p>	<p>Grade 6 SE/TE: Define the Problem, 500-501 Develop Possible Solutions, 501</p> <p>Grade 7 SE/TE: Define the Problem, 552-553 Develop Possible Solutions, 553</p> <p>Grade 8 SE/TE: Define the Problem, 532-533 Develop Possible Solutions, 533</p>
<p>3.1.7.B Describe the use of models as an application of scientific or technological concepts.</p>	
<p>3.1.7.B.1 Identify and describe different types of models and their functions.</p>	<p>Grade 5 SE/TE: Model It!, 28 Assessment, 36 Math Toolbox, Model It!, 67 littleBits, Design It, 195 Using Models and Prototypes, EM12</p> <p>Grade 6 SE/TE: Model It!, Developing Models, 71 Literacy Connection: Integrate with Visuals, 345 Model It!: Triangulation, 358 Model It!: Hot Spot Modeling, 367 Scientific Models, 494</p> <p>Grade 7 SE/TE: Plant Cell, 16 Animal Cell, 17 Model It!, 19 Figure 6, 30 Quest Check-In, 31 Making Food, 45 uDemonstrate Lab: Design and Build a Microscope, 64-67 Figure 6, 156 Mutualism and Commensalism, 243 Math Toolbox, 427 Scientific Models, 546</p>

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<p>Continued 3.1.7.B.1 Identify and describe different types of models and their functions.</p>	<p>Grade 8 SE/TE: Model It!, 92, Formation of Ammonia Model It!, 201, Use Models uDemonstrate Lab, Modeling Lunar Phases, 464-467 Model It!, 391, City Climates Scientific Models, 526</p>
<p>3.1.7.B.2 Apply models to predict specific results and observations (e.g., population growth, effects of infectious organisms).</p>	<p>Grade 5 SE/TE: uConnect Lab: How can spinning affect a planet's shape?, 276 Model It!, 296 uInvestigate Lab: How does change affect organisms in an ecosystem?, 379 uDemonstrate Lab: How can you model matter cycles in the Earth system?, 402-403</p> <p>Grade 6 SE/TE: Model It!: Dry Ice, 63 Model It!: Developing Models, 71 Evidence-Based Assessment, 80-81 uDemonstrate Lab: Melting Ice, 82-85 Evidence-Based Assessment, 130-131 Model It!: Friction - Energy Transformation, 162 Model It!: Develop Models, 286-287 Model It!: Predict North America's Movement, 337 Model It!: Hot Spot Modeling, 367 Model It!: From Rock to Soil, 393 uDemonstrate Lab: Materials on a Slope, 430-433 Scientific Models, 494</p> <p>Grade 7 SE/TE: Model It!: Raisins No More, 28 Model It!: Learning from Experience, 123 Model It!: Where does your water come from?, 216 Math Toolbox: Wind Power, 304 uDemonstrate Lab: To Drill or Not to Drill, 330-333 Model It!: Magnetic Field Strength, 475 Model It: Noise? No Problem!, 532 Scientific Models, 546</p>

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<p>Continued 3.1.7.B.2 Apply models to predict specific results and observations (e.g., population growth, effects of infectious organisms).</p>	<p>Grade 8 SE/TE: Model It!: Develop Models, 157 Model It!: Use Models, 201 uDemonstrate Lab: Make the Right Call, 230-233 Model It!: Natural Selection in Action, 253 Model It!: Mimicry in Coevolution, 264 Model It!: The Earth is Heating Up, 356 uDemonstrate Lab: Not All Heating is Equal, 376-379 Model It!, City Climates, 391 Plan It!, Space Probe Mission, 489 Evidence-Based Assessment, 518-519</p>
<p>3.1.7.B.3 Explain systems by outlining a system's relevant parts and its purpose and/or designing a model that illustrates its function.</p>	<p>Grade 5 SE/TE: uInvestigate Lab: How does a greenhouse work?, 111 Crosscutting Concepts Toolbox: Scale, 215 uConnect Lab: How can spinning affect a planet's shape?, 277 uConnect Lab: How do the parts in a fish tank make up a system?, 358 Sports Connection, 360</p> <p>Grade 6 SE/TE: uDemonstrate Lab: 3, 2, 1...Liftoff!, 132-135 The Earth System, 179-181 Model It!: Triangulation, 358 Model It!: Hot Spot Modeling, 367 Scientific Models, 494</p> <p>Grade 7 SE/TE: Figure 2, 16-17 Model It!, The Substance of Life, 19 Quest Check-In, 23 Stage 2: Making Food, 45 Figure 6, 46 uEngineer It!, 49 uDemonstrate Lab: Design and Build a Microscope, 64-67 Model It!: Flower to Fruit, 157 Scientific Models, 546</p>

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<p>Continued 3.1.7.B.3 Explain systems by outlining a system's relevant parts and its purpose and/or designing a model that illustrates its function.</p>	<p>Grade 8 SE/TE: uEngineer It?, Making Water Safe to Drink, 77 uEngineer It!, Generating Energy from Potholes, 149 Model It!, 436 Case Study: The Ptolemaic Model, 438-439 Design It!, 442 uEngineer It!, Power from the Tides, 459 Scientific Models, 526</p>
<p>3.1.7.C Identify patterns as repeated processes or recurring elements in science and technology.</p>	
<p>3.1.7.C.1 Identify different forms of patterns and use them to group and classify specific objects.</p>	<p>Grade 5 SE/TE: Quest Check-In Lab, 32-33 Performance-Based Assessment, 38-39 uDemonstrate Lab: What star patterns can you see?, 295</p> <p>Grade 6 SE/TE: Quest Kick-Off, 436 Figure 5, 455 Evolution and Classification, 456-457 Lesson 2 Check, 458 Figure 10, 467 Vertebrates, 481 Lesson 4 Check, 483 Evidence-Based Assessment, 486-487 uDemonstrate Lab, 488-491</p> <p>Grade 7 SE/TE: Science Skills, 544</p> <p>Grade 8 SE/TE: Case Study, 107 Topic 4 Assessment, 228-229 The Solar System, Figure 7, Describe Patterns, 480 Science Skills, 524</p>

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<p>3.1.7.C.2 Identify repeating structure patterns.</p>	<p>Grade 5 SE/TE: Crosscutting Concepts Toolbox: Patterns, 300 Reading Check, Sequence, 300</p> <p>Grade 6 SE/TE: uDemonstrate Lab: Help Out the Wildlife, 38-41 Lesson 4 Check, 254 It's All Connected: The Slow Acceptance of Continental Drift, 339 Science Skills, 492</p> <p>Grade 7 SE/TE: Case Study: The Case of the Disappearing Cerulean Warbler, 202-203 Math Toolbox, 398 Case Study: Super Ultra High Definition!, 524-525 Science Skills, 544</p> <p>Grade 8 SE/TE: uDemonstrate Lab: A Bony Puzzle, 294-297 Evidence-Based Assessment, 374-375</p>
<p>3.1.7.C.3 Identify and describe patterns that occur in physical systems (e.g., construction, manufacturing, transportation), informational systems and biochemical-related systems.</p>	<p>Grade 7 SE/TE: Math Toolbox: Applying Ohm’s Law, 508 Electrical Signals, 516 Model It!, 516 Electromagnetic Signals, 517 Binary Signals, 520 Math Toolbox, Cryptography, 520 Figure 6, 520 Case Study: Super Ultra High Definition!, 524-525 Math Toolbox: Digital Data Explosion, 529</p>

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<p>3.1.7.D Explain scale as a way of relating concepts and ideas to one another by some measure.</p>	
<p>3.1.7.D.1 Apply various applications of size and dimensions of scale to scientific, mathematical, and technological applications.</p>	<p>Grade 5 SE/TE: Solve it with Science, 15 uInvestigate Lab: How does a greenhouse work?, 111 Using Models and Prototypes, EM12 uBe a Scientist, 260</p> <p>Grade 6 SE/TE: Evidence-Based Assessment, 36-37 Evidence-Based Assessment, 80-81 Model It!: Ring of Fire, 344 Scientific Models, 494</p> <p>Grade 7 SE/TE: Math Toolbox, Cryptography, 520 Figure 6, 520 Case Study: Super Ultra High Definition!, 524-525 Math Toolbox: Digital Data Explosion, 529 Scientific Models, 546</p> <p>Grade 8 SE/TE: uDemonstrate Lab: Scaling Down the Solar System, 520-523 Scientific Models, 526</p>
<p>3.1.7.D.2 Describe scale as a form of ratio and apply to a life situation.</p>	<p>Grade 5 SE/TE: uBe a Scientist, 260 Quest Check-In Lab, 262 Quest Findings, 264 uDemonstrate Lab: How can you compare the sizes of objects in space?, 270-271</p> <p>Grade 7 SE/TE: Math Toolbox, Getting the Right Magnification, 11</p>

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3.1.7.E Identify change as a variable in describing natural and physical systems.	
3.1.7.E.1 Describe fundamental science and technology concepts that could solve practical problems.	<p>Grade 5 SE/TE: uEngineer It!: Foam, Sweet Foam uEngineer It!: Make Energy the Solar Way, 194 Using Models and Prototypes, EM12</p> <p>Grade 6 SE/TE: Careers: Energy Engineer, 117 Engineer It!: Catching Water With a Net, 239 uEngineer It!: Designing to Prevent Destruction, 363 Quest Check-Ins, 373</p> <p>Grade 7 SE/TE: uEngineer It!: Gardening in Space, 159 uEngineer It!, A Life-Saving Mistake, 513 Case Study: Super Ultra High Definition!, 524-525 Roger That!, 530-531 Quest Check-In, 534 Figure Test and Evaluate a Solution, 554</p> <p>Grade 8 SE/TE: Making Water Safe to Drink, 77 uEngineer It!, Generating Energy from Potholes, 149 Windmills of the Future, 361 Power from the Tides, 459</p>
3.1.7.E.2 Explain how ratio is used to describe change.	This standard is not addressed in Elevate Science, Grade 5-8.
3.1.7.E.3 Describe the effect of making a change in one part of a system on the system as a whole.	<p>Grade 5 SE/TE: Earth's Systems, 104 Quest Connection, 105 uInvestigate Lab: How does change affect organisms in an ecosystem:?, 379</p>

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3.2.7 Inquiry and Design	
3.2.7.A Explain and apply scientific and technological knowledge.	
3.2.7.A.1 Distinguish between a scientific theory and a belief.	<p>Grade 6 SE/TE: Scientific Theories and Laws, 496</p> <p>Grade 7 SE/TE: Scientific Theories and Laws, 548</p> <p>Grade 8 SE/TE: Scientific Theories and Laws, 528</p>
3.2.7.A.2 Answer "What if" questions based on observation, inference or prior knowledge or experience.	<p>Grade 5 SE/TE: Science Practice Toolbox, 9 uBe a Scientist: Food Coloring in Water, 28 uEngineer It!: A New Home</p> <p>Grade 6 SE/TE: Question It!, 112 Question It! 152 Quest Check-In, 349 Question It!, 372 Scientific Inquiry, 494</p> <p>Grade 7 SE/TE: Figure 2, 84 uDemonstrate Lab: Changes in an Ecosystem, 282-285 Question It!, 342 uDemonstrate Lab: Making Waves, 446-449 Question It!, 457 uDemonstrate Lab: Planetary Detective, 496-499 Scientific Inquiry, 546</p> <p>Grade 8 SE/TE: Question It!, Temporary Names, 23 Question It!, 147 Question It!, We Got the Beak, 245 Question It!, Interpret Diagrams, 271 uDemonstrate Lab: A Bony Puzzle, 294-297 Scientific Inquiry, 526</p>

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<p>3.2.7.A.3 Explain how skepticism about an accepted scientific explanation led to a new understanding.</p>	<p>Grade 5 SE/TE: Analyzing and Interpreting Data, EM4</p> <p>Grade 6 SE/TE: It's All Connected: The Slow Acceptance of Continental Drift, 339 Scientific Attitudes, 493 Scientific Theories and Laws, 496</p> <p>Grade 7 SE/TE: uEngineer It!: Eating Oil, 213 Extraordinary Science: An Appetite for Plastic?, 223 Scientific Attitudes, 545 Scientific Theories and Laws, 548</p> <p>Grade 8 SE/TE: Refining Earth's History, 317 Models of the Solar System, 434-436, Lesson 1 Check, 437 Scientific Attitudes, 525 Scientific Theories and Laws, 528</p>
<p>3.2.7.A.4 Explain how new information may change existing theories and practice.</p>	<p>Grade 5 SE/TE: Analyzing and Interpreting Data, EM4</p> <p>Grade 6 SE/TE: Scientific Theories and Laws, 496</p> <p>Grade 7 SE/TE: uEngineer It!: Eating Oil, 213 Extraordinary Science: An Appetite for Plastic?, 223 Scientific Theories and Laws, 548</p> <p>Grade 8 SE/TE: Darwin's Hypothesis, 246 Case Study: 438-439 Scientific Theories and Laws, 528</p>

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<p>3.2.7.B Apply process knowledge to make and interpret observations.</p>	
<p>3.2.7.B.1 Measure materials using a variety of scales.</p>	<p>Grade 5 SE/TE: Measuring Properties, 9 Mass and Volume, 29 Science Tools, EM2</p> <p>Grade 6 SE/TE: Weight, 15 Math Toolbox, 17 uDemonstrate Lab: Help Out the Wildlife, 38-41</p> <p>Grade 7 SE/TE: uDemonstrate Lab: Reaction Research, 132-135 Using a Laboratory Balance, 557 Measurements, 550</p> <p>Grade 8 SE/TE: uDemonstrate Lab: Evidence of Chemical Change, 112-115 uDemonstrate Lab: Not All Heating Is Equal, 376-379 uDemonstrate Lab: Scaling Down the Solar System, 520-523 Using a Laboratory Balance, 537</p>
<p>3.2.7.B.2 Describe relationships by making inferences and predictions.</p>	<p>Grade 5 SE/TE: uBe a Scientist: Food Coloring in Water, 28 Science Practice Toolbox: Construct Explanations, 60 Literacy Toolbox: Cause and Effect, 104 Quest Check-In Lab: How do building materials affect energy efficiency?, 210-211</p> <p>Grade 6 SE/TE: Math Toolbox: Temperature and Density of Water, 19 Case Study: Rising to the Occasion, 76-77 Model It!: Develop Models, 144 Case Study: Earth Power, 156-157 Topic Review and Assess, 166-167 Case Study: The Case of the Shrinking Sea, 208-209 Evidence-Based Assessment, 376-377</p>

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<p>3.2.7.B.2 Describe relationships by making inferences and predictions.</p>	<p>Scientific Inquiry, 494</p> <p>Grade 7 SE/TE: Special Delivery, Figure 2, 84 Case Study, The Mighty Mole-Rat, 58-59 uDemonstrate Lab, Reaction Research, 132-135 Case Study: The Case of the Disappearing Cerulean Warbler, 202-203 Math Toolbox, Room to Roam, 260 Case Study: The Dependable Elephant, 266-267</p> <p>Grade 8 SE/TE: Case Study: Unlocking the Power of the Atom, 14-15 Connect It!, 28 Reading Check, 51, 121, 132, 272 Analyze and Interpret Data, 63 Lesson Check, 97, 181, 318 Evidence-Based Assessment, 162-163</p>
<p>3.2.7.B.3 Communicate, use space / time relationships, define operationally, raise questions, formulate hypotheses, test and experiment.</p>	<p>Grade 5 SE/TE: uInvestigate Lab: What happens to substances over time?, 205 Question It!, 250 Quest Check-In Lab: What plant foods provide the most energy and nutrients?, 334-335 Question It!, 371 Ask Question, EM0</p> <p>Grade 6 SE/TE: Connect It!, 4 Connect It!, 24 Literacy Connection: Conduct Research Projects, 153 Case Study: Earth Power, 156-157 Connect It!, 158 Math Toolbox: Temperature Scales, 224 Topic Review and Assess, 268-269 Quest Check-In, 315 Science Skills, 492 Science Experiments, 495</p>

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<p>Continued 3.2.7.B.3 Communicate, use space / time relationships, define operationally, raise questions, formulate hypotheses, test and experiment.</p>	<p>Grade 7 SE/TE: Quest Check-In, 48 uDemonstrate Lab: Reaction Research, 132-133 Reading Check, 416 uDemonstrate Lab: Planetary Detective, 496-499 Quest Check-In, 512 uDemonstrate Lab: Over and Out, 540-543 Scientific Inquiry, 546</p> <p>Grade 8 SE/TE: Question It!, 23, 147 Connect It!, 48 uDemonstrate Lab: Shedding Light on Ions, 60-63 uDemonstrate Lab: An Ocean of a Problem, 420-423 Science Experiments, 527 Scientific Inquiry, 526</p> <p>TE Only: Investigate, 410</p>
<p>3.2.7.B.4 Design controlled experiments, recognize variables, and manipulate variables.</p>	<p>Grade 5 SE/TE: uInvestigate Lab: Is goop solid or liquid?, 49</p> <p>Grade 6 SE/TE: uDemonstrate Lab: Help Out the Wildlife, 38-41 uDemonstrate Lab: 3, 2, 1...Liftoff!, 132</p> <p>Grade 7 SE/TE: uDemonstrate Lab: Reaction Research, 132-135 uDemonstrate Lab: Making Waves, 446-449 Scientific Attitudes, 545</p> <p>Grade 8 SE/TE: uDemonstrate Lab: Shedding Light on Ions, 60-63 Science Experiments, 527</p>
<p>3.2.7.B.5 Interpret data, formulate models, design models, and produce solutions.</p>	<p>Grade 5 SE/TE: uInvestigate Lab: Is goop solid or liquid?, 49 STEM Quest Check-In Lab: How can you make modeling dough?, 74-75 uEngineer It!: Foam Sweet Foam, 76-77 Quest Check-In Lab: How can you make a new and improved formula?, 86-87</p>

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<p>Continued) 3.2.7.B.5 Interpret data, formulate models, design models, and produce solutions.</p>	<p>uConnect Lab: How can we reuse materials to design new products?, 184 uEngineer It!: Make Energy the Solar Way, 194-195 uInvestigate Lab: What happens to substances over time?, 205 uDemonstrate Lab: How can you use the energy of water?, 228-229</p> <p>Grade 6 SE/TE: Math Toolbox: Home Runs and Air Density, 123 uDemonstrate Lab: 3, 2, 1...Liftoff!, 132-135 uDemonstrate Lab: Modeling a Watershed, 214-217 uDemonstrate Lab: Water from Trees, 272-275 Model It!: Modeling the Cycling of Material, 314</p> <p>Grade 7 SE/TE: uEngineer It!: An Artificial Leaf, 49 uDemonstrate Lab: Design and Build a Microscope, 64-67 Model It!: Flower to Fruit, 157 uEngineer It! Gardening in Space, 159 Case Study: Warmer Waters, Fewer Fish, 180-181 Math Toolbox: Natural Gas Consumption in the U.S., 296 Case Study: Phosphorus Fiasco, 316-317 Evidence-Based Assessment, 382-383 Evidence-Based Assessment, 494-495 Math Toolbox: Digital Data Explosion, 529 Design a Solution, 554 Communicate the Solution, 555</p> <p>Grade 8 SE/TE: Plan It!: Acid or Base?, 52 Math Toolbox: Synthetic and Natural Materials, 100 Evidence-Based Assessment, 332-333 Math Toolbox: Windchill Factor, 354 Evidence-Based Assessment, 418-419 uEngineer It!: Power from the Tides, 459 Design a Solution, 534 Communicate the Solution, 53</p>

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3.2.7.C Identify and use the elements of scientific inquiry to solve problems.	
3.2.7.C.1 Generate questions about objects, organisms and/or events that can be answered through scientific investigations.	<p>Grade 5 SE/TE: <ul style="list-style-type: none"> uInvestigate Lab: How does the geosphere affect the hydrosphere?, 121 uInvestigate Lab: Where are the metals?, 187 uInvestigate Lab: Which color is best at capturing solar energy?, 197 uInvestigate Lab: What happens to substances over time?, 205 uDemonstrate Lab: How can you use the energy of water?, 228-229 Quest Check-In Lab: How does gravity affect matter?, 283 uInvestigate Lab: How do the parts of an ecosystem work together?, 361 uInvestigate Lab: How can matter change in an ecosystem?, 369 </p> <p>Grade 6 SE/TE: <ul style="list-style-type: none"> uDemonstrate Lab: Testing Thermal Conductivity, 170-173 uDemonstrate Lab: Water from Trees, 272-275 uDemonstrate Lab: The Rock Cycle in Action, 322-325 Redi’s Experiment, 442 Pasteur’s Experiment, 443 </p> <p>Grade 7 SE/TE: <ul style="list-style-type: none"> uDemonstrate Lab: Reaction Research, 132-135 uDemonstrate Lab: Clean and Green, 186-189 uDemonstrate Lab: Changes in an Ecosystem, 282-285 uDemonstrate Lab: To Drill or Not to Drill, 330-333 uDemonstrate Lab: Making Waves, 446-449 </p> <p>Grade 8 SE/TE: <ul style="list-style-type: none"> Plan It!: Acid or Base?, 52 uDemonstrate Lab: Evidence of Chemical Change, 112-115 uDemonstrate Lab: Make the Right Call, 230-233 uDemonstrate Lab: A Bony Puzzle, 294-297 </p>

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<p>3.2.7.C.2 Evaluate the appropriateness of questions.</p>	<p>Grade 5 SE/TE: Science Practice, Toolbox, 9 Ask Questions, EM0</p> <p>Grade 6 SE/TE: Question It!, 153 Quest Check-Ins, 373 Scientific Inquiry, 494</p> <p>Grade 7 SE/TE: Question It!, 38 Quest Check-In, 127 Question It!, 342, 486 Scientific Inquiry, 546</p> <p>Grade 8 SE/TE: Question It!, 147 Question It!, 245 Question It!, 271 Scientific Inquiry, 526</p>
<p>3.2.7.C.3 Design an investigation with limited variables to investigate a question.</p>	<p>Grade 5 SE/TE: uInvestigate Lab: Which color is best at capturing solar energy?, 197 uInvestigate Lab: What happens to substances over time?, 205 uDemonstrate Lab: How can you use the energy of water?, 228-229 Quest Check-In Lab: How does gravity affect matter?, 283 uInvestigate Lab: How do animals get energy from the sun?, 339 uInvestigate Lab: How can matter change in an ecosystem?, 369 Carry Out Investigations, EM1</p> <p>Grade 6 SE/TE: uDemonstrate Lab: Water from Trees, 272-275 uDemonstrate Lab: The Rock Cycle in Action, 322-325 Science Experiments, 495</p>

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<p>(Continued) 3.2.7.C.3 Design an investigation with limited variables to investigate a question.</p>	<p>Grade 7 SE/TE: uDemonstrate Lab: Clean and Green, 186-189 Math Toolbox: Dependent and Independent Variables, 221 Science Experiments, 547</p> <p>Grade 8 SE/TE: Plan It!: Acid or Base?, 52 uDemonstrate Lab: Shedding Light on Ions, 60-63 uDemonstrate Lab: An Ocean of a Problem, 420-423 Science Experiments, 527</p>
<p>3.2.7.C.4 Conduct a two-part experiment.</p>	<p>Grade 5 SE/TE: Quest Check-In lab: How can you compare the properties of matter?, 32-33 uInvestigate Lab: How can you separate a mixture?, 79 uConnect Lab: Where does water flow... and how fast?, 142 uInvestigate Lab: Where did that water come from?, 145 uInvestigate Lab: How can you separate salt from water?, 163 uInvestigate Lab: How do the parts of an ecosystem work together?, 361 uBe a Scientist: Investigate Pollution, 382</p> <p>Grade 6 SE/TE: uDemonstrate Lab: Water from Trees, 272-275 uDemonstrate Lab: The Rock Cycle in Action, 322-325 uDemonstrate Lab: Materials on a Slope, 430-433 Plan It!, 477 uDemonstrate Lab: It's Alive!, 488-491 Science Experiments, 495</p>

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<p>(Continued) 3.2.7.C.4 Conduct a two-part experiment.</p>	<p>Grade 7 SE/TE: Plan It!: Reaction Time, 85 uDemonstrate Lab: Reaction Research, 132-135 uDemonstrate Lab: Changes in an Ecosystem, 282-285 uDemonstrate Lab: Planetary Detective, 496-499 Science Experiments, 547</p> <p>Grade 8 SE/TE: uDemonstrate Lab: Make the Right Call, 230-233 uDemonstrate Lab: Core Sampling Through Time, 334-337 uDemonstrate Lab: Not All Heating is Equal, 376-379 uDemonstrate Lab: Modeling Lunar Phases, 464-467</p>
<p>3.2.7.C.5 Judge the significance of experimental information in answering the question.</p>	<p>Grade 5 SE/TE: uDemonstrate Lab: How do you know what it is?, 40-41 uDemonstrate Lab: How does mass change when you make glop?, 94-95 Carry Out Investigations, EM1</p> <p>Grade 6 SE/TE: uDemonstrate Lab: Melting Ice, 82-85 Literacy Connection: Use Information, 60, 143 uDemonstrate Lab: It's Alive, 488-491 Scientific Inquiry, 494</p> <p>Grade 7 SE/TE: uDemonstrate Lab: Analyze the Data, 189 uDemonstrate Lab: Analyze the Data, 387 Scientific Inquiry, 546</p> <p>Grade 8 SE/TE: uDemonstrate Lab: Core Sampling Through Time, 334-337 uDemonstrate Lab: An Ocean of a Problem, 420-423 Scientific Inquiry, 526 Science Experiments, 527</p>

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<p>3.2.7.C.6 Communicate appropriate conclusions from the experiment.</p>	<p>Grade 5 SE/TE: Same Atoms, Different Matter, 22 Quest Check-In Lab, 23 uDemonstrate Lab: How do you know what it is?, 40-41 uDemonstrate Lab: How does mass change when you make glop?, 94-95 Literacy Connection: Draw Conclusions, 143 Literacy Toolbox: Draw Conclusions, 150 Quest Check-In Lab, 283 uInvestigate Lab, 321</p> <p>Grade 6 SE/TE: uDemonstrate Lab: Help Out the Wildlife, 38-41 uDemonstrate Lab: Melting Ice, 82-85 Math Toolbox: Mass, Speed, and Kinetic Energy, 102 Case Study: Earth Power, 156-157 uDemonstrate Lab: Modeling Sea-Floor Spreading, 378-381</p> <p>Grade 7 SE/TE: uDemonstrate Lab: Changes in an Ecosystem, 282-285 uDemonstrate Lab: To Drill or Not to Drill, 330-333 uDemonstrate Lab: Washing Away, 384-387 uDemonstrate Lab: Planetary Detective, 496-499</p> <p>Grade 8 SE/TE: Question It!: Metallic Bonding, 32 Literacy Connection: Draw Evidence, 73 Literacy Connection: Determine Conclusions, 135 uDemonstrate Lab: Make the Right Call, 230-233 uDemonstrate Lab: A Bony Puzzle, 294-297 Connect It!, 342 uDemonstrate Lab: An Ocean of a Problem, 420-423</p>

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3.2.7.D Know and use the technological design process to solve problems.	
3.2.7.D.1 Define different types of problems.	<p>Grade 5 SE/TE: uEngineer It!: It's Melting!, 152-153 STEM Quest Check-In Lab: How do we filter water?, 160-161 Defining Problems, EM10</p> <p>Grade 6 SE/TE: Define the Problem, 131 Question It!, 401 Define the Problem, 500-501</p> <p>Grade 7 SE/TE: Define the Problem, 552-553</p> <p>Grade 8 SE/TE: Define the Problem, 532</p>
3.2.7.D.2 Define all aspects of the problem, necessary information and questions that must be answered.	<p>Grade 5 SE/TE: Quest Kick-Off, 140 uEngineer It!: It's Melting!, 152-153 STEM Quest Check-In Lab: How do we filter water?, 160-161 Quest Kick-Off, 182 Question It!, 250 Defining Problems, EM10</p> <p>Grade 6 SE/TE: Quest Kick-Off, 2 Quest Kick-Off, 88 Quest Kick-Off, 138 Quest Check-In, 315 Define the Problem, 500-501</p> <p>Grade 7 SE/TE: Quest Kick-Off, 2 Question It!: A Two-Celled Organism?, 38 Quest Kick-Off, 138 Quest Kick-Off, 192 Quest Kick-Off, 234 Question It!: Endangered Species, 259 Define the Problem, 552-553</p>

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<p>(Continued) 3.2.7.D.2 Define all aspects of the problem, necessary information and questions that must be answered.</p>	<p>Grade 8 SE/TE: Quest Kick-Off, 2 Quest Kick-Off, 66 Question It!, 147 Quest Kick-Off, 300 Define the Problem, 532</p>
<p>3.2.7.D.3 Propose the best solution.</p>	<p>Grade 5 SE/TE: Science Practice Toolbox, 54 uEngineer It!: A New Home, 118-119 uEngineer It!, Making Energy the Solar Way, 194-195 Designing Solutions, EM11 Optimizing Solutions, EM13</p> <p>Grade 6 SE/TE: Lesson 3 Check, Construct a Solution, 413 Test and Evaluate a Solution, 502 TE Only: Design Challenge, 197, 239</p> <p>Grade 7 SE/TE: Quest Kick-Off, 192; Findings 227 Quest Kick-Off, 234; Findings 281 Quest Kick-Off, 336; Findings 383 Test and Evaluate a Solution, 554</p> <p>Grade 8 SE/TE: Quest Quick-Off, 2; Findings, 59 Quest Kick-Off, 66; Findings, 111 Quest Kick-Off, 340; Findings, 375 Test and Evaluate a Solution, 534</p>
<p>3.2.7.D.4 Design and propose alternative methods to achieve solutions.</p>	<p>Grade 5 SE/TE: Quest Check-In Lab: How can you make a new and improved formula?, 86-87 STEM uInvestigate Lab, How can you find water underground?, 155 Making Energy the Solar Way, 194-195 Designing Solutions, EM11 Optimizing Solutions, EM13</p> <p>Grade 6 SE/TE: uEngineer It!, 363 Test and Evaluate a Solution, 502</p>

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(Continued) 3.2.7.D.4 Design and propose alternative methods to achieve solutions.	<p>Grade 7 SE/TE: Quest Kick-Off, How can you design a system to stop a thief?, 390 Test and Evaluate a Solution, 554</p> <p>Grade 8 SE/TE: Design It!, 286 Design It!, 412 Develop Possible Solutions, 533 Test and Evaluate a Solution, 534</p>
3.2.7.D.5 Apply a solution.	<p>Grade 5 SE/TE: STEM uInvestigate Lab, How can you find water underground?, 155 uDemonstrate Lab: How can you use the energy of water?, 228-229</p> <p>Grade 6 SE/TE: uDemonstrate Lab: Help Out the Wildlife, 38-41 Quest Kick-Off: How can you keep hot water from cooling down?, 138</p> <p>Grade 7 SE/TE: Plan It!, 56 Environmental Interactions, Figure 8, 148 Communicate the Solution, 555</p> <p>Grade 8 SE/TE: Plan It!: Acid or Base?, 52 uDemonstrate Lab, Stopping on a Dime, 164-167 Communicate the Solution, 535</p>
3.2.7.D.6 Explain the results, present improvements, identify and infer the impacts of the solution.	<p>Grade 5 SE/TE: STEM uInvestigate Lab, How can you find water underground?, 155 uDemonstrate Lab: How can you use the energy of water?, 228-229 Communicate Information, EM9 Designing Solutions, EM11</p>

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<p>Continued 3.2.7.D.6 Explain the results, present improvements, identify and infer the impacts of the solution.</p>	<p>Grade 6 SE/TE: uDemonstrate Lab: Help Out the Wildlife, 38-41 Test and Evaluate a Solution, 502 Redesign and Retest the Solution, 503</p> <p>Grade 7 SE/TE: uDemonstrate Lab: Making Waves, 446-449 Test and Evaluate a Solution, 554 Redesign and Retest the Solution, 555</p> <p>Grade 8 SE/TE: Design It!: Adapting for Climate Change, 412 uDemonstrate Lab: An Ocean of a Problem, 420-423 Test and Evaluate a Solution, 534 Redesign and Retest the Solution, 535</p>
<p>3.3.7 Biological Sciences</p>	
<p>3.3.7.A Describe the similarities and differences that characterize diverse living things.</p>	
<p>3.3.7.A.1 Describe how the structures of living things help them function in unique ways.</p>	<p>Grade 5 SE/TE: Plants and Energy, 322 Animals and Energy, 323 Photosynthesis, 330 Model It!, 330</p> <p>Grade 6 SE/TE: Connect It!, 158 Model It!, 464 Form and Function, 473</p> <p>Grade 7 SE/TE: Cell Function, 5 Interactivity, 5 Lesson 1 Check, 12 Parts of a Cell, 15-20 The Right Cell for the Job, Figure 5, 21</p> <p>Grade 8 SE/TE: Comparisons Among the Islands, 245 Animals and Plants Evolve Further, 322 Flowering Plants, 325</p>

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3.3.7.A.2 Explain how to use a dichotomous key to identify plants and animals.	Grade 6 SE/TE: Classifying Organisms, 451-455 Using Taxonomic Key, 455
3.3.7.A.3 Account for adaptations among organisms that live in a particular environment.	Grade 7 SE/TE: Connect It!, 236 Adaptations and Survival, 237-238 Adaptations, 240 Model It!: Predator and Prey Adaptations, 240 Lesson 1 Check, 243 Grade 8 SE/TE: Comparisons Among the Islands, 245 Lesson 1 Check, 247 Quest Check-In, 247 Adapt or Perish, 410
3.3.7.B Describe the cell as the basic structural and functional unit of living things.	
3.3.7.B.1 Identify the levels of organization from cell to organism.	Grade 7 SE/TE: Levels of Organization, 74-75 Lesson 1 Check, 80 Topic 2 Review and Assess, 128
3.3.7.B.2 Compare life processes at the organism level with life processes at the cell level.	Grade 6 SE/TE: Cellular Organization, 440 Quest Connection, 472 Grade 7 SE/TE: Cells Working Together, 21-22 The Cell Cycle, 34-38 Stage 1: Interphase Stage 2: Mitosis, 37 Stage 3: Cytokinesis, 38 Lesson 4 Check, 39 Grade 8 SE/TE: Forming Sex Cells, 189 Comparing Meiosis and Mitosis, 191 Chromosome Counselors, 193 uEngineer It!, Reinventing DNA as Data Storage, 203

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3.3.7.B.3 Explain that cells and organisms have particular structures that underlie their functions.	<p>Grade 6 SE/TE: Connect It!, 472</p> <p>Grade 7 SE/TE: Cell Function, 5 Parts of a Cell, 15-20 Evidence-Based Assessment, 62-63</p> <p>Grade 8 SE/TE: Comparisons Among the Islands, 245 Model It!, 253</p>
3.3.7.B.4 Describe and distinguish among cell cycles, reproductive cycles and life cycles.	<p>Grade 6 SE/TE: Growth and Development, 440 Reproduction, 441</p> <p>Grade 7 SE/TE: The Cell Cycle, 34-38 Stage 2: Mitosis, 37 Lesson 4 Check, 39 Comparing Types of Reproduction, 143 Environmental Factors, 148 Lesson 1 Check, 149</p> <p>Grade 8 SE/TE: Case Study: Cephalopods, 182-183 Comparing Meiosis and Mitosis, 191</p>
3.3.7.B.5 Explain disease effects on structures or functions of an organism.	<p>Grade 6 SE/TE: Bacterial Cell Structures, 464 Infectious Bacteria, 464 Obtaining Food, 465 Survival, 465 Bacteria, 464-466 Bacterial Reproduction, 465-466</p> <p>Grade 7 SE/TE: Fighting Disease, 90 Lesson 1 Check, 91</p> <p>Grade 8 SE/TE: Careers: Genetic Counselor, 193</p>

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3.3.7.C Know that every organism has a set of genetic instructions that determines its inherited traits.	
3.3.7.C.1 Identify and explain inheritable characteristics.	<p>Grade 7 SE/TE: Inherited Traits, 144-146 Lesson 1 Check, 149</p> <p>Grade 8 SE/TE: Quest Kick-Off, 170 Mendel's Observations, 173 Parents and Offspring, 174 Careers: Genetic Counselor, 193</p>
3.3.7.C.2 Identify that the gene is the basic unit of inheritance.	<p>Grade 7 SE/TE: Inherited Traits, 144 Interactivity, 147</p> <p>Grade 8 SE/TE: Genes and Alleles, 175 Writing Alleles, 176 Lesson 1 Check, 181 Evidence-Based Assessment, 228-229</p>
3.3.7.C.3 Identify basic patterns of inheritance (e.g., dominance, recessive, co- dominance).	<p>Grade 7 SE/TE: Inherited Traits, 144 Codominance, 145 Lesson 1 Check, 149</p> <p>Grade 8 SE/TE: Probability and Heredity, 177-179 Lesson 1 Check, 181 Topic 4 Review and Assess, 226-227 uDemonstrate Lab: Make the Right Call, 230-233</p>

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<p>3.3.7.C.4 Describe how traits are inherited.</p>	<p>Grade 6 SE/TE: Form and Function, 473</p> <p>Grade 7 SE/TE: Sexual Reproduction, 142 Inherited Traits, 144-146 Acquired Traits, 147</p> <p>Grade 8 SE/TE: Quest Kick Off: How can you sell a new fruit?, 170-171 Connect It!, 172 Quest Connection, 172 Connect It!, 184 Meiosis, 190 Comparing Meiosis and Mitosis, 191 Quest Connection, 194 Quest Connection, 204</p>
<p>3.3.7.C.5 Distinguish how different living things reproduce (e.g., vegetative budding, sexual).</p>	<p>Grade 6 SE/TE: Reproduction, 441</p> <p>Grade 7 SE/TE: Asexual and Sexual Reproduction, 141-143 Lesson 1 Check, 149 Plant Reproduction, 151 Plant Life Cycles, 152-153 Structures for Reproduction, 154-157 Lesson 2 Check, 158</p> <p>Grade 8 SE/TE: Case Study: Cephalopods, 182-183</p>
<p>3.3.7.C.6 recognize that mutations can alter a gene.</p>	<p>Grade 8 SE/TE: Genetic Mutations, 208 Types of Mutations, 208-209 Sex-Linked Mutations, 209 Mutation Effects, 211 Genes and Natural Selection, 254-255 Mutations, 260-261 Genetic Material and Evolution, 281</p>

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3.3.7.C.7 Describe how selective breeding, natural selection and genetic technologies can change genetic makeup of organisms.	<p>Grade 8 SE/TE: Quest Connection, 204 Quest Connection, 216 Artificial Selection, 217 Selective Breeding, 217 Genetic Engineering, 218-221 Gene Therapy in Humans, 220 Darwin’s Search for a Mechanism, 249-251 Selection, 252-253</p>
3.3.7.D Explain basic concepts of natural selection.	
3.3.7.D.1 Identify adaptations that allow organisms to survive in their environment.	<p>Grade 7 SE/TE: Connect It!, 236 Adaptations and Survival, 237-238 Adaptations, 240 Model It!: Predator and Prey Adaptations, 240</p> <p>Grade 8 SE/TE: Galápagos Organisms, 244-245 Question It!: We Got the Beak!, 245 Question Check-In, 247 Connect It!, 248 Quest Connection, 248 Adapt or Perish, 410</p>
3.3.7.D.2 Describe how an environmental change can affect the survival of organisms and entire species.	<p>Grade 5 SE/TE: ulInvestigate Lab: How does changes affect organisms in an ecosystem? 379 Visual Literacy Connection: What happens to a forest ecosystem after a fire? 380-381 Lesson Check, 383 Quest Check-In Lab: How does change affect organisms in an ecosystem?, 384-385</p> <p>Grade 7 SE/TE: Ecosystem Disruptions and Population Survival, 250-251 Question It!: Endangered Species, 259 Species Extinction, 259 Lesson 3 Check, 265</p>

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(Continued) 3.3.7.D.2 Describe how an environmental change can affect the survival of organisms and entire species.	Grade 8 SE/TE: Extinction, 274-275 Lesson 4 Check, 277 Global to Local: A New Mass Extinction?, 329 Adapt or Perish, 410 Lesson 3 Check, 414
3.3.7.D.3 know that differences in individuals of the same species may give some advantage in surviving and reproducing.	Grade 7 SE/TE: Connect It, 236 Adaptations and Survival, 237 Grade 8 SE/TE: Observing Changes, 239-242 Galápagos Organisms, 244-245 Model It!, 253
3.3.7.D.4 recognize that populations of organisms can increase rapidly.	Grade 7 SE/TE: The Human Population, 339 Population Changes, 340 Population Growth Rate, 341 Math Toolbox: Projected Growth Rates, 341 Topic Review and Assess, 380-381
3.3.7.D.5 Describe the role that fossils play in studying the past.	Grade 6 SE/TE: Evidence From Fossils, 332 Grade 8 SE/TE: Mary Anning's Fossils, 242 Lesson 1 Check, 247 How Fossils Form, 268 Fossil Evidence of Evolution, 270-271 Lesson 4 Check, 277 Case Study: Could Dinosaurs Roar?, 278-279 Quest Kick Off: How do paleontologists know where to look for fossils?, 300-301 Connect It!, 320 Earth's Climate History, 396

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3.3.7.D.6 Explain how biologic extinction is a natural process.	<p>Grade 7 SE/TE: Species Extinction, 259</p> <p>Grade 8 SE/TE: Extinction, 274 Lesson 4 Check, 277 Global to Local: A New Mass Extinction?, 329</p>
3.4.7 Physical Science, Chemistry and Physics	
3.4.7.A Describe concepts about the structure and properties of matter.	
3.4.7.A.1 Identify elements as basic building blocks of matter that cannot be broken down chemically.	<p>Grade 5 SE/TE: Atoms, 18</p> <p>Grade 6 SE/TE: Atoms, 8 Elements, 8 Components of Matter, 8-10 Molecules, 9</p> <p>Grade 7 SE/TE: Cells, 5 Principles of Cell Theory, 8 Lesson 1 Check, 12</p> <p>Grade 8 SE/TE: Quest Connection, 4 The First Theories on Atoms, 6 Thomson's Model, 7 Rutherford's Model, 7-8 Bohr's Model, 8 Cloud Model, 9</p>

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3.4.7.A.2 Distinguish compounds from mixtures.	<p>Grade 5 SE/TE: Molecules, 19 Mixtures, 80 Solutions, 81 Visual Literacy Connection: When is a mixture also a solution?, 82-83 Mixtures and Solutions, 85</p> <p>Grade 6 SE/TE: Hands-on Lab, 9 Compounds, 10 Types of Mixtures, 11 Lesson 1 Check, 12</p> <p>Grade 8 SE/TE: Bonding, 30 Types of Mixtures, 69</p>
3.4.7.A.3 Describe and conduct experiments that identify chemical and physical properties.	<p>Grade 5 SE/TE: uInvestigate Lab: How can you identify chemical changes?, 65 uBe a Scientist, 72 Quest Check-in Lab: How can you make modeling dough?, 74-75</p> <p>Grade 6 SE/TE: Quest Kickoff: How can you use science to make special effects?, 2-3 Physical Properties, 6 Chemical Properties, 7 Physical Properties of Solids, 49</p> <p>Grade 8 SE/TE: Quest Kickoff: How can you use chemistry to solve a culinary mystery?, 2-3 Quest Connection, 16 Quest Check-In, 27 Properties of Pure Substances, 101 uDemonstrate: Evidence of Chemical Change, 112-115 uDemonstrate Lab: Core Sampling Through Time, 334-337</p>

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3.4.7.A.4 Describe reactants and products of simple chemical reactions.	<p>Grade 5 SE/TE: New Substances, 64-66 Examples of Chemical Changes, 72-73 Evidence-Based Assessment, 92-93 uDemonstrate Lab: How does mass change when you make glop?, 94-95</p> <p>Grade 6 SE/TE: Quest Kickoff: How can you use science to make special effects?, 2-3 Chemical Changes in Matter, 27-29</p> <p>Grade 8 SE/TE: Chemical Change, 80 Building and Breaking Chemical Bonds, 81 Formation of a Precipitate, 83 Chemical Equations, 91-93 Structure of an Equation, 92 Chemical Reactions and Equations, 93 Lesson 3 Check, 97 uDemonstrate Lab: Evidence of Chemical Change, 112-115</p>
3.4.7.B Relate energy sources and transfers to heat and temperature.	
3.4.7.B.1 Identify and describe sound changes in moving objects.	<p>Grade 7 SE/TE: The Doppler Effect, 420 Lesson 3 Check, 421</p>
3.4.7.B.2 Know that the sun is a major source of energy that emits wavelengths of visible light, infrared and ultraviolet radiation.	<p>Grade 5 SE/TE: Structure of the Sun, 239</p> <p>Grade 8 SE/TE: Energy from the Sun, 343-346 Model It!: The Earth is Heating Up, 356 Topic Review and Assess, 372-373</p>

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3.4.7.B.3 Explain the conversion of one form of energy to another by applying knowledge of each form of energy.	<p>Grade 5 SE/TE: Energy Flow in Ecosystems, 389</p> <p>Grade 6 SE/TE: Kinetic and Potential Energy, 120 Energy Changes Form, 119-121 Energy Transformation and Transfer, 121</p> <p>Grade 7 SE/TE: Connect It!, 480 Electric Motors, 483 Electromagnetic Induction, 484 Quest Check-In, 489</p> <p>Grade 8 SE/TE: Heat Transfer in the Atmosphere, 347 Methods of Heat Transfer, 348 Heat Transfer at Earth’s Surface, 349 Lesson 1 Check, 350</p>
3.4.7.B.4 Explain the parts and functions in an electrical circuit.	<p>Grade 7 SE/TE: Electric Current and Circuits, 458-459 Quest Connection, 504 Parts of a Circuit, 505-507 Series Circuits, 509 Parallel Circuits, 510-511 Quest Connection, 514 Quest Connection, 526</p>
3.4.7.C Identify and explain the principles of force and motion.	
3.4.7.C.1 Describe the motion of an object based on its position, direction and speed.	<p>Grade 8 SE/TE: Connect It!, 121 An Object in Motion, 121-122 How Forces Affect Motion, 123-126 Lesson 1 Check, 127 Quest Check-In, 137 Topic Review and Assess, 160-161</p>
3.4.7.C.2 Classify fluid power systems according to fluid used or mode of power transmission (e.g., air, oil).	<p>Grade 6 SE/TE: uEngineer It!, Gathering Speed with Superconductors, 33</p>

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<p>3.4.7.C.3 Explain various motions using models.</p>	<p>Grade 6 SE/TE: uEngineer It!, Gathering Speed with Superconductors, Design Challenge, 33 uEngineer It!, Shockwave to the Future, Design Challenge, 155</p> <p>Grade 8 SE/TE: Model It!, 133 uEngineer It!: Generating Energy From Potholes, 149 Topic Review and Assess, 160-161 Evidence-Based Assessment, 162-163 Quest Findings, 163 uDemonstrate Lab: Stopping on a Dime, 164-167</p>
<p>3.4.7.C.4 Explain how convex and concave mirrors and lens change light images.</p>	<p>Grade 7 SE/TE: Convex Mirrors, 437 Mirror Images, 437 Concave Mirrors, 438 Model It!: Fun with Mirrors, 438 Convex Lenses, 439 Lenses, 439-440</p>
<p>3.4.7.C.5 Explain how sound and light travel in waves of differing speeds, sizes and frequencies.</p>	<p>Grade 7 SE/TE: Density, 416 Factors Affecting the Speed of Sound, 416 Stiffness, 416 Temperature, 416 Loudness and Pitch, 417-419 Factors Affecting Pitch, 419</p>

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3.4.7.D Describe essential ideas about the composition and structure of the universe and the earth's place in it.	
3.4.7.D.1 Compare various planets' characteristics.	<p>Grade 5 SE/TE: Visual Literacy Connection: What is in our solar system?, 248-249 Lesson 2 Check, 251 Gas Giants, 256 Jupiter: Gas Giant with Many Moons, 257 Visual Literacy Connection, 258-259 Uranus, Neptune, 260 uBe a Scientist: Scale and Proportion, 260 Topic Assessment, 266-267</p> <p>Grade 8 SE/TE: The Solar System, 480-481 Topic 10 Review and Assess, 516</p>
3.4.7.D.2 Describe basic star types and identify the sun as a star type.	<p>Grade 5 SE/TE: Earth's Sun, 238 Brightness of Stars, 240 Size of Stars, 241</p> <p>Grade 8 SE/TE: Comparing the Sun and Planets, 475 Structure of the Sun, 477 Life Span, 498-500 Supernovas, 499 White Dwarfs, 499 Neutron Stars, Pulsars, and Black Holes, 500 Size, 501</p>

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<p>3.4.7.D.3 Describe and differentiate comets, asteroids and meteors.</p>	<p>Grade 5 SE/TE: Visual Literacy Connection: What is in our solar system?, 248-249 Visual Literacy Connection: How are the outer planets aligned?, 258-259 Comets and Asteroids, 261 Lesson 3 Check, 261 STEM Math Connection: How long does it take to orbit?, 293</p> <p>Grade 8 SE/TE: Connect It!, 428 Math Toolbox: Halley's Comet, 430 Meteors and Comets, 430 Quest Connection, 472 Smaller Solar System Objects, 476 Case Study: Comparing Solar System Objects, 484-485</p>
<p>3.4.7.D.4 Identify gravity as the force that keeps planets in orbit around the sun and governs the rest of the movement of the solar system and the universe.</p>	<p>Grade 5 SE/TE: Sports Connection, 246 Gravitational Force, 280 Gravity on Earth, 281 uBe a Scientist: Explore Gravity, 281 Gravity in Space, 282 Quest Connection, 282 Topic Assessment, 308-309</p> <p>Grade 6 SE/TE: Connect It!, 100</p> <p>Grade 8 SE/TE: Types of Forces, 124 Factors That Affect Gravity, 154-155 Gravity, 445 Gravity and Orbits, 445-447 Extraordinary Science: Traveling Through the Milky Way, 515 Evidence-Based Assessment, 518-519'</p>

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3.4.7.D.5 Illustrate how the positions of stars and constellations change in relation to the Earth during an evening and from month to month.	<p>Grade 5 SE/TE: Earth’s Rotation, 286 Earth’s Revolution, 287 Lesson 2 Check, 291 Visual Literacy Connection: How do we identify star patterns in the sky?, 298-299</p> <p>Grade 8 SE/TE: Constellations, 431 Rotation, 441 How Earth Moves, 441-442 Topic Review and Assess, 460-461</p>
3.4.7.D.6 Identify equipment and instruments that explore the universe.	<p>Grade 5 SE/TE: A Very Old System, 235 uEngineer It! What's with the dust? , 244-245 Career Technician, Astronomical Technicians, 265 STEM Connection, 278</p> <p>Grade 8 SE/TE: Connect It!, 486 Collecting Space Data, 487-489 Quest Check In, 494 Traveling Through the Milky Way, 515</p>
3.4.7.D.7 Identify the accomplishments and contributions provided by selected past and present scientists in the field of astronomy.	<p>Grade 5 SE/TE: Career Connection: Astronomical Technicians, 265 Career Connection, Planetarium Curator, 307</p> <p>Grade 8 SE/TE: Classifying Stars, 505 The Scale of the Universe, 511 The Future of the Universe, 512</p>
3.4.7.D.8 Identify and articulate space program efforts to investigate possibilities of living in space and on other planets.	<p>Grade 5 SE/TE: Supporting: STEM Connection, 278</p> <p>Grade 8 SE/TE: History of Space Exploration, 490-493 uEngineer It! Blast Off!, 495</p>

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3.5.7 Earth Sciences	
3.5.7.A Describe earth features and processes.	
3.5.7.A.1 Describe major layers of the earth.	<p>Grade 5 SE/TE: Lithosphere, 108 uBe a Scientist, 108 Lesson 1 Check, 108</p> <p>Grade 6 SE/TE: Earth's Layers, 283-287 Earth's Layers, Figure 4, 284 Model It!, 286-287 Lesson 1 Check, 290 Topic Review and Assess, 318 Evidence-Based Assessment, 320-321</p>
3.5.7.A.2 Describe the processes involved in the creation 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.	<p>Grade 5 SE/TE: Natural Disruptions, 127</p> <p>Grade 6 SE/TE: Math Toolbox: Tallest Mountain, 188 Mountains, 190 Case Study: Might Mauna Loa, 316-317 Quest Kickoff: How safe is it to hike around Mount Rainier?, 328-329 Connect It!, 340 Types of Crust, 342 Model It!: Ring of Fire, 344 Case Study: Australia on the Move, 350-351 Quest Connection, 364 Volcanoes, 365 At Convergent Boundaries, 366 At Divergent Boundaries, 366 Volcanoes and Plate Boundaries, 366-367 Volcano Parts, 368 Volcano Landforms, 368-369 uDemonstrate Lab: Modeling Sea-Floor Spreading, 378-381</p> <p>Grade 7 SE/TE: Erosion, 360 Nutrient Depletion, 360 Desertification, 361</p>

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<p>Continued</p>	<p>Grade 8 SE/TE: Charles Lyell's Rocks, 242 Clues from Faults, 304 Changes in Rocks, 306 Lesson 1 Check, 309</p>
<p>3.5.7.A.3 Describe the processes that formed Pennsylvania geologic structures and resources including mountains, glacial formations, water gaps and ridges.</p>	<p>For supporting content, please see: Grade 5 SE/TE: Natural Disruptions, 127</p> <p>Grade 6 SE/TE: Mountains, 190 Connect It!, 340 Types of Crust, 342 Transform Boundaries, 348 New Landforms from Plate Movement, 355-356 At Convergent Boundaries, 366 At Divergent Boundaries, 366 Glaciers Change Earth's Surface 417-421 uDemonstrate Lab: Materials on a Slope, 430-433</p> <p>Grade 8 SE/TE: Charles Lyell's Rocks, 242 Clues from Faults, 304 Changes in Rocks, 306</p>
<p>3.5.7.A.4 Explain how the rock cycle affected rock formations in the state of Pennsylvania.</p>	<p>For supporting content, please see: Grade 6 SE/TE: How Rocks Form, 305-308 Lesson 1 Check, 309 The Flow of Energy in the Rock Cycle, 312 The Rock Cycle, 313 Plate Tectonics and the Rock Cycle, 314 Lesson 4 Check, 315 uDemonstrate Lab, The Rock Cycle in Action, 322-325</p> <p>Grade 8 SE/TE: Changes in Rocks, 306</p>

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<p>3.5.7.A.5 Distinguish between examples of rapid surface changes (e.g., landslides, earthquakes) and slow surface changes (e.g., weathering).</p>	<p>Grade 6 SE/TE: The Flow of Energy in the Rock Cycle, 312 Types of Crust, 342 Case Study: Australia on the Move, 350-351 Connect It!, 352 Stress and Earth’s Crust, 353-354 Earthquakes, 357-359 Earthquake Risks and Tsunamis, 360-361 uEngineer It!: Ground Shifting Advances, 395 Connect It!, 396 Mass Movement, 398-399 Math Toolbox, Major Landslides and Mudflows, 399</p>
<p>3.5.7.A.6 Identify living plants and animals that are similar to fossil forms.</p>	<p>Grade 5 SE/TE: Energy from Fuels, 198</p> <p>Grade 8 SE/TE: Fossils, 243 Figure 5, 243 Connect It!, 266 Quest Connection, 266 Figure 5, 271 Math Toolbox, 273 Lesson 4 Che3eck, 277 Quest Check-In, 277 Case Study: Rewriting the History of Your Food, 310-311 Connect It!, 320</p>

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3.5.7.B Recognize earth resources and how they affect everyday life.	
3.5.7.B.1 Identify and locate significant earth resources (e.g., rock types, oil, gas, coal deposits) in Pennsylvania.	<p>Grade 5 SE/TE: <ul style="list-style-type: none"> uInvestigate Lab: Where are the metals? 187 Natural Resources, 188 Land and Forest Resources, 189 Water Resources, 191 Air Resources, 192 Topic Assessment, 224-225 </p> <p>Grade 6 SE/TE: <ul style="list-style-type: none"> Describing Rocks, 303-304 Sedimentary Rock, 306 Case Study: U.S. Energy Consumption, 126-127 </p> <p>Grade 7 SE/TE: Land as a Resource, 357-358</p>
3.5.7.B.2 Explain the processes involved in the formation of oil and coal in Pennsylvania.	<p>Grade 5 SE/TE: Energy from Fuels, 198</p> <p>Grade 6 SE/TE: Case Study: U.S. Energy Consumption, 126-127</p> <p>Grade 7 SE/TE: Fossil Fuels: 292-296 Lesson 1 Check, 299 Topic Review and Assess, 326</p>
3.5.7.B.3 Explain the value and uses of different earth resources (e.g., selected minerals, ores, fuel sources, agricultural uses).	<p>Grade 5 SE/TE: <ul style="list-style-type: none"> uInvestigate Lab: Where are the metals?, 187 Natural Resources, 188 Land and Forest Resources, 189 Minerals and Rocks, 190 Water Resources, 191 Air Resources, 192 Energy from Fuels, 198 Human Uses of Energy, 198 Impacts of Energy Production, 202 uBe a Scientist: Find Your Impact, 202 </p> <p>Grade 6 SE/TE: Connect It!, 198 Plan It! Building a Reservoir, 203 Groundwater, 204</p>

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<p>Continued 3.5.7.B.3 Explain the value and uses of different earth resources (e.g., selected minerals, ores, fuel sources, agricultural uses).</p>	<p>Grade 7 SE/TE: Model It!: Where does your water come from?, 216 Economic Value, 256 Natural Resources, 291 Minerals and Ores, 309-313 Humans and Minerals, 314 Water on Earth, 319-321 Surface Water, 320 Quest Connection, 338 Human Activity, 342 Using Natural Resources, 342-343 Land as a Resource, 357-358 Mining, 358 Sustainable Forest Management, 364-366'</p>
<p>3.5.7.B.4 Compare the locations of human settlements as related to available resources.</p>	<p>Grade 5 SE/TE: uInvestigate Lab: Where are the metals?, 187 Land and Forest Resources, 189 Water Resources, 191</p> <p>Grade 6 SE/TE: Interactivity, 203 Plan It! Building a Reservoir, 203 Case Study: The Case of the Shrinking Sea, 208-209 Topic Review and Assess, 210 Case Study: Buyer Beware!, 414-415</p> <p>Grade 7 SE/TE: Quest Connection, 290 Connect It!, 338 The Human Population, 339 Human Activity, 342 Impact on the Earth System, 343</p> <p>Grade 8 SE/TE: Human Activities, 400-401</p>

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3.5.7.C Describe basic elements of meteorology.	
3.5.7.C.1 Explain weather forecasts by interpreting weather data and symbols.	<p>Grade 6 SE/TE: Hands-On Lab, 250 Quest Check-In, 254 Careers: Meteorologist, 255 Evidence-Based Assessment, 270-271</p> <p>Grade 8 SE/TE: Global Wind Belts, Figure 6, 358 Jet Streams, Figure 7, 359</p>
3.5.7.C.2 Explain the oceans' impact on local weather and the climate of a region.	<p>Grade 6 SE/TE: Winds, 228 Global Patterns and Local Weather, 251</p> <p>Grade 8 SE/TE: Effects on Climate, 365 Literacy Connection, Figure 2, 365 El Nino and La Nina, 366 Lesson 3 Check, 369 Topic Review and Assess, 372-373 Evidence-Based Assessment, 374-375 Ocean Currents, 387</p>
3.5.7.C.3 Identify how cloud types, wind directions and barometric pressure changes are associated with weather patterns in different regions of the country.	<p>Grade 6 SE/TE: Air Pressure, 225-226 Heating of Earth, 227 Winds, 228 Lesson 1 Check, 229 Relative Humidity, 233 How Air Masses Move, 241 How To Predict Weather, 249-251 Global Patterns and Local Weather, 251 Weather Technology, 251</p> <p>Grade 8 SE/TE: Measuring Wind, 354 Global Winds, 356 Global Wind Patterns, 358-359 Effects of Global Wind Belts, 358 Jet Streams, 359 Connect It!, 362 Factors Affecting Surface Currents, 364 Topic Review and Assess, 372-373</p>

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<p>3.5.7.C.4 Explain and illustrate the processes of cloud formation and precipitation.</p>	<p>Grade 6 SE/TE: Condensation, 232 Figure 2, 232 Hands-On Lab, 232 Water Leaves the Atmosphere, 234-236 Figure 4, 234 Figure 5, 235 The Water Cycle, 237 Model It! 237 Lesson 2 Check, 238</p>
<p>3.5.7.C.5 Describe and illustrate the major layers of the earth's atmosphere.</p>	<p>Grade 5 SE/TE: Atmosphere, 114 Hydrosphere and Atmosphere Together, 115</p> <p>Grade 6 SE/TE: Earth's Spheres, 180 Energy Flow, 181 Figure 2, 181 Layers of the Atmosphere, 227 Energy in the Atmosphere, 227-228</p> <p>Grade 7 SE/TE: Protecting the Ozone Layer, 353 Lesson 2 Check, 354</p> <p>Grade 8 SE/TE: Sunlight and the Atmosphere, 344</p>
<p>3.5.7.C.6 Identify different air masses and global wind patterns and how they relate to the weather patterns in different regions of the U.S.</p>	<p>Grade 6 SE/TE: Winds, 228 Major Air Masses, 241-242 Figure 2, 242 Global Patterns and Local Weather, 251</p> <p>Grade 8 SE/TE: Global Winds, 356 Effects of Global Wind Belts, 358 Global Wind Patterns, 358-359 Jet Streams, 359 Connect It!, 362 Factors Affecting Surface Currents, 364 Topic Review and Assess, 372-373</p>

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<p>3.5.7.D Explain the behavior and impact of the earth's water systems.</p>	
<p>3.5.7.D.1 Explain the water cycle using the processes of evaporation and condensation.</p>	<p>Grade 5 SE/TE: <ul style="list-style-type: none"> uInvestigate Lab: Where did that water come from?, 145 Water on Earth, 146 Movement of Earth's Water, 147 uBe a Scientist: Solid, Liquid, Gas, 147 Visual Literacy Connection: How does water cycle on Earth? 148-149 Quest Connection, 150 uInvestigate Lab: How can you separate salt from water?, 163 <p>Grade 6 SE/TE: <ul style="list-style-type: none"> Water and Rock Cycles, 179 Evaporation, 199 Condensation, 200 Water Enters the Atmosphere, 231-233 Condensation, 232 The Water Cycle, 237 Lesson 2 Check, 238 <p>Grade 7 SE/TE: <ul style="list-style-type: none"> Evaporation, 216 Water Cycle, 216-217 Condensation, 217 Hands-on Lab, 217 The Water Cycle, Figure 3, 217 Lesson 3 Check, 222 </p> </p></p>
<p>3.5.7.D.2 Describe factors that affect evaporation and condensation.</p>	<p>Grade 5 SE/TE: <ul style="list-style-type: none"> Changes in Temperature, 59-60 uInvestigate Lab: Where did that water come from?, 145 Water on Earth, 146 Movement of Earth's Water, 147 uBe a Scientist: Solid, Liquid, Gas, 147 Visual Literacy Connection: How does water cycle on Earth?, 148-149 Quest Connection, 150 </p>

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<p>Continued 3.5.7.D.2 Describe factors that affect evaporation and condensation.</p>	<p>Grade 6 SE/TE: Evaporation and Boiling, 60 Condensation, 62 Quest Check-In, 64 Condensation, 200 Topic Review and Assess, 210-211 Water Enters the Atmosphere, 231-233 Condensation, 232 The Water Cycle, 237 Quest Check-In, 238</p> <p>Grade 7 SE/TE: Evaporation, 216 Condensation, 217 The Water Cycle, Figure 3, 217</p>
<p>3.5.7.D.3 Distinguish salt from fresh water (e.g., density, electrical conduction).</p>	<p>Grade 5 SE/TE: Solutions, 81 Visual Literacy Connection: How does water cycle on Earth?, 148-149 Investigate Lab: How can you separate salt from water?, 163 Salt Levels, 168</p> <p>Grade 6 SE/TE: Distribution of Earth's Water, 201 Salt Water, 201 Salinity, 205</p> <p>Grade 7 SE/TE: Desalination, 323 Water as a Resource, 371</p>

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<p>3.5.7.D.4 Compare the effect of water type (e.g., polluted, fresh, salt water) and the life contained in them.</p>	<p>Grade 5 SE/TE: Quest Check-In: Raining Acid, 109 uBe a Scientist: Modeling Water Distribution, 158 Human Resource Use and Pollution, 208</p> <p>Grade 6 SE/TE: Fresh Water, 201 Rivers, 202 Ponds and Lakes, 203 uDemonstrate Lab: Modeling a Watershed, 214-217 Topic Review and Assess, 426-427</p> <p>Grade 7 SE/TE: Using Water, 322 Household Pollutants, 372 Sources of Freshwater Pollution, 372 Sources of Ocean Pollution, 374-375 Cleaning Oil Spills, 376 Reducing Water Pollution, 376-377</p>
<p>3.5.7.D.5 Identify ocean and shoreline features, (e.g., bays, inlets, spit, tidal marshes).</p>	<p>Grade 6 SE/TE: Ocean Features, 206 Figure 9, 206 Lesson 3 Check, 207</p> <p>Grade 7 SE/TE: Surface Water, 320</p>

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3.6.7 Technology Education	
3.6.7.A Explain biotechnologies that relate to related technologies of propagating, growing, maintaining, adapting, treating and converting.	
3.6.7.A.1 Identify the environmental, societal and economic impacts that waste has in the environment.	<p>Grade 5 SE/TE: Threats to the Shoreline, 169 uBe a Scientist: Oil Spill in a Bottle, 169 STEM Connection, 368</p> <p>Grade 6 SE/TE: Case Study: An Epic Disaster, 22-23 Case Study: The Case of the Shrinking Sea, 208-209</p> <p>Grade 7 SE/TE: uEngineer It! Eating Oil, 213 Human Activities, 374-375 Cleaning Oil Spills, 376 uEngineer It!, From Wastewater to Tap Water, 379</p> <p>Grade 8 SE/TE: Case Study: Is Plastic Really Fantastic?, 106-107 Human Activities, 400-401 Lesson 2 Check, 403 Case Study: The Carbon Cycle, 404-405</p>
3.6.7.A.2 Identify and explain the impact that a specific medical advancement has had on society.	<p>Grade 6 SE/TE: uEngineer It!: Prosthetics on the Move, 107 uEngineer It!: A Disease Becomes a Cure, 471</p> <p>Grade 7 SE/TE: uEngineer It! Impact on Society, Artificial Skin, 81</p> <p>Grade 8 SE/TE: Genetic Engineering, 218-221 Gene Therapy in Humans, 220</p>

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<p>3.6.7.A.3 Explain the factors that were taken into consideration when a specific object was designed.</p>	<p>Grade 5 SE/TE: uEngineer It: Robo Chef, 24-25 uEngineer It: Foam Sweet Foam, 76-77 uEngineer It: A New Home, 118-119 uEngineer It! What’s with the Dust?, 244-245</p> <p>Grade 6 SE/TE: uEngineer It!: Shockwave to the Future, 155 uEngineer It!: A Daring Bridge, 197</p> <p>Grade 7 SE/TE: Case Study, Nothing Goes to Waste, 368-369 uEngineer It!, A Life-Saving Mistake, Interactivity, 513 Extraordinary Science, Beam Me Up, 535</p> <p>Grade 8 SE/TE: uEngineer It! Making Water Safe to Drink, 77 uEngineer It!: Reinventing DNA as Data Storage, 203 uEngineer It! Windmills of the Future, 361 uEngineer It! Power from the Tides, 459</p>
<p>3.6.7.A.4 Define and describe how fuels and energy can be generated through the process of biomass conversion.</p>	<p>For supporting content, please see:</p> <p>Grade 5 SE/TE: Producers, 370 Decomposers, 371</p> <p>Grade 7 SE/TE: Case Study, Nothing Goes to Waste, 368-369</p>
<p>3.6.7.A.5 Identify and group basic plant and animal production processes.</p>	<p>Grade 5 SE/TE: Producers, 370 Decomposers, 371</p> <p>Grade 6 SE/TE: Characteristics of Living Things, 439-441 Roles of Fungi, 469</p> <p>Grade 7 SE/TE: Energy and Matter Transfer, 208-211 Lesson 2 Check, 212</p>

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Continued 3.6.7.A.5 Identify and group basic plant and animal production processes.	Grade 8 SE/TE: Comparing Meiosis and Mitosis, 191 Genes and Natural Selection, 254-255
3.6.7.A.6 explain the impact that agricultural science has had on biotechnology.	Grade 7 SE/TE: uEngineer It! Gardening in Space, 159 Grade 8 SE/TE: uEngineer It!, Eating Oil, 213 Controversies of DNA Use, 224 Evidence-Based Assessment, 228-229
3.6.7.B Explain information technologies of encoding, transmitting, receiving, storing, retrieving and decoding.	
3.6.7.B.1 Demonstrate the effectiveness of image generating technique to communicate a story (e.g., photography, video).	Online Interactivities, Videos, and Hands-On Labs in every lesson engage students in image generating techniques. See also: Grade 5 SE/TE: Digital Tools, EM3 Grade 6 SE/TE: Literacy Connection: Integrate with Visuals, 7 Literacy Connection: Integrate with Visuals, 345 Science Experiments, 495 Grade 7 SE/TE: Quest Connection, 4 Quest Check-In, 31 Quest Kickoff, 502 Quest Findings, 539 Science Experiments, 547 Grade 8 SE/TE: Science Experiments, 527

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<p>3.6.7.B.2 Analyze and evaluate the effectiveness of a graphic object designed and produced to communicate a thought or concept.</p>	<p>Grade 5 SE/TE: Model It!, 80 Digital Tools, EM3 Supporting Citations: Constructing Explanations, EM6 Communicate Information, EM9</p> <p>Grade 6 SE/TE: Literacy Connection: Integrate with Visuals, 7 uEngineer It!, A Daring Bridge, 197 Literacy Connection: Integrate with Visuals, 345 Science Experiments, 495 Communicate the Solution, 503</p> <p>Grade 7 SE/TE: Quest Connection, 4 Quest Check-In, 31 uEngineer It!, Micro-Hydro Power, 307 Science Experiments, 547 Communicate the Solution, 555</p> <p>Grade 8 SE/TE: Science Experiments, 527 Communicate the Solution, 535</p>
<p>3.6.7.B.3 Apply basic technical drawing techniques to communicate an idea or solution to a problem.</p>	<p>Grade 5 SE/TE: Supporting Citations: Model It!, 80</p> <p>In Grades 6-8, uEngineer It: Design Challenges provides students with design tasks using the Engineering Design Notebook. See also:</p> <p>Grade 6 SE/TE: Communicate the Solution, 503</p> <p>Grade 7 SE/TE: uEngineer It!, From Bulldozers to Biomes, 277 uEngineer It!, A Life-Saving Mistake, 513 Communicate the Solution, 555</p>

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<p>Continued 3.6.7.B.3 Apply basic technical drawing techniques to communicate an idea or solution to a problem.</p>	<p>Grade 8 SE/TE: uDemonstrate Lab: Stopping on a Dime, 164-167 Reinventing DNA as Data Storage, 203 uEngineer It!, Power from the Tides, 459 uEngineer It!: Blast Off!, 495</p>
<p>3.6.7.B.4 Apply the appropriate method of communications technology to communicate a thought.</p>	<p>Grade 5 SE/TE: Digital Tools, EM3 Communicate Information, EM9</p> <p>Grade 6 SE/TE: Literacy Connection: Integrate with Visuals, 7 Case Study: Earth Power, 156-157 Connect It!, 158 Literacy Connection: Integrate with Visuals, 345 Science Experiments, 495</p> <p>Grade 7 SE/TE: Quest Connection, 4 Quest Check-In, 31 uEngineer It! Say Cheese!, 411 Quest Check-In, 512 Science Experiments, 547</p> <p>Grade 8 SE/TE: uDemonstrate Lab: An Ocean of a Problem, 420-423 Science Experiments, 527 Communicate the Solution, 535</p>

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3.6.7.C Explain physical technologies of structural design, analysis and engineering, personnel relations, financial affairs, structural production, marketing, research and design.	
3.6.7.C.1 Use knowledge of material effectiveness to solve specific construction problems (e.g., steel vs. wood bridges).	<p>Grade 5 SE/TE: uEngineer It!, Define It, 77 uEngineer It!, Making Energy the Solar Way, 194-195</p> <p>Grade 6 SE/TE: uEngineer It!: A Daring Bridge, 197 uEngineer It!: Designing to Prevent Destruction, 363</p> <p>Grade 7 SE/TE: uDemonstrate Lab; Design and Build a Microscope, 64-67 uEngineer It!, Artificial Skin, 81</p> <p>Grade 8 SE/TE: uEngineer It!: Making Water Safe to Drink, 77 uEngineer It!: Generating Energy From Potholes, 149</p>
3.6.7.C.2 Differentiate among the different types of construction applications (e.g., microwave tower, power plants, aircrafts).	<p>Grade 6 SE/TE: uEngineer It!: Gathering Speed with Superconductors, 33</p> <p>Grade 8 SE/TE: uEngineer It!: Windmills of the Future, 361</p>
3.6.7.C.3 Explain basic material processes that manufactured objects undergo during production. (e.g., separating, forming, combining).	<p>Grade 6 SE/TE: Quest Kickoff: How can you use science to make special effects?, 2-3 Quest Findings, 37 uEngineer It!: From "Ink" to Objects: 3D Printing, 55</p> <p>Grade 7 SE/TE: uEngineer It!: From Wastewater to Tap Water, 379</p>
3.6.7.C.4 Evaluate a construction activity by specifying task analyses and necessary resources.	<p>Grade 7 SE/TE: uEngineer It!: Gardening in Space, 159</p>

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3.6.7.C.5 Explain the relationships among the basic resources needed in the production process for a specific manufactured object.	<p>Grade 5 SE/TE: uEngineer It!: Ecosystems in a Box, 394-395</p> <p>Grade 6 SE/TE: uEngineer It!: From “Ink” to Objects: 3D Printing, 55 uEngineer It!: Designing to Prevent Destruction, 363</p> <p>Grade 7 SE/TE: uEngineer It!: Artificial Skin, 49 uEngineer It!, Gardening in Space, 159</p>
3.6.7.C.6 Explain the difference between design engineering and production engineering processes.	<p>Grade 6 SE/TE: uEngineer It!: Prosthetics on the Move, 107 Careers: Energy Engineer, 117 Question It!: Building on a Volcano, 372 Careers: Civil Engineer, 403</p> <p>Grade 7 SE/TE: uEngineer It!: Artificial Skin, 81 Desalination, 323 uEngineer It!: Electromagnetism In Action, 479</p> <p>Grade 8 SE/TE: uEngineer It!: Generating Energy From Potholes, 149 uEngineer It: Reinventing DNA as Data Storage, 203 uEngineer It: Tiny Fossil Big Accuracy, 319</p>
3.6.7.C.7 Analyze manufacturing steps that affect waste and pollutants.	<p>Grade 5 SE/TE: Quest Check-In: Raining Acid, 109 Local-to-Global Connection, 154 Supporting citations: Freshwater Shortages, 158 Threats to the Shoreline, 169 Quest Findings: Water, Water Everywhere!, 172 Career Connection: Water Quality Specialist, 173 Visual Literacy Connection: How can human activities change Earth's systems?, 206-207 Human Resource Use and Pollution, 208 uBe a Scientist: Investigate Pollution, 382</p>

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<p>Continued 3.6.7.C.7 Analyze manufacturing steps that affect waste and pollutants.</p>	<p>Grade 6 SE/TE: uDemonstrate Lab: Modeling a Watershed, 214-217</p> <p>Grade 7 SE/TE: Human Impacts, 322-323 Global to Local: Working Together to Reduce Air Pollution, 355 Land Reclamation, 362 Sustainable Forestry, 366 Sources of Ocean Pollution, 374-375 Cleaning Oil Spills, 376</p> <p>Grade 8 SE/TE: uEngineer It!, Making Water Safe to Drink, 77</p>
<p>3.6.7.C.8 Explain transportation technologies of propelling, structuring, suspending, guiding, controlling and supporting.</p>	<p>Grade 6 SE/TE: uEngineer It!: A Daring Bridge, 197 uEngineer It!: Gathering Speed with Superconductors, 33</p> <p>Grade 8 SE/TE: uEngineer It!, Generating Energy from Potholes, 149</p>
<p>3.6.7.C.9 Identify and explain the workings of several mechanical power systems.</p>	<p>Grade 6 SE/TE: uEngineer It!: Shockwave to the Future, 155</p> <p>Grade 7 SE/TE: uEngineer It!, Micro-Hydro Power, 307</p> <p>Grade 8 SE/TE: uEngineer It!, Windmills of the Future, 361</p>
<p>3.6.7.C.10 Model and explain examples of vehicular propulsion, control, guidance, structure and suspension systems.</p>	<p>Grade 6 SE/TE: uEngineer It!: Gathering Speed with Superconductors, 33</p>

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3.6.7.C.11 Explain the limitations of land, marine, air and space transportation systems.	<p>Grade 6 SE/TE: uEngineer It!: Examining Earth’s Interior from Space, 291 See also supporting uDemonstrate Lab: 3, 2, 1...Liftoff!, 132-135 uEngineer It!: A Daring Bridge, 197 uEngineer It!: Gathering Speed with Superconductors, 33</p> <p>Grade 8 SE/TE: uEngineer It!, Blast Off!, 475</p>
3.7.7 Technological Devices	
3.7.7.A Describe the safe and appropriate use of tools, materials and techniques to answer questions and solve problems.	
3.7.7.A.1 Identify uses of tools, machines, materials, information, people, money, energy and time that meet specific design criteria.	<p>Grade 5 SE/TE: STEM Quest Check-In Lab: How can you make modeling dough?, 74-75 Quest Check-In Lab: How can you make a new and improved formula?, 86-87 uEngineer It!: A New Home, 118-119 uInvestigate Lab: How can you find water underground?, 155 STEM Quest Check-In Lab: How do we filter water?, 160-161 uInvestigate Lab: How can you separate salt from water?, 163 uDemonstrate Lab: How can water move upward?, 178-179 uEngineer It!: What's with the dust?, 244-245 Defining Problems, EM10</p> <p>Grade 6 SE/TE: uEngineer It!: Gathering Speed with Superconductors, 33 uDemonstrate Lab: 3, 2, 1...Liftoff!, 132-135</p> <p>Grade 7 SE/TE: uDemonstrate Lab: Design and Build a Microscope, 64-67 Specify Design Constraints, 273 Design It!, 275</p>

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<p>Continued 3.7.7.A.1 Identify uses of tools, machines, materials, information, people, money, energy and time that meet specific design criteria.</p>	<p>Grade 8 SE/TE: uEngineer It! Generating Energy from Potholes, 149 uDemonstrate Lab: Stopping on a Dime, 164-167 uEngineer It! Changing Climate Change , 41</p>
<p>3.7.7.A.2 Describe safe procedures for using tools and materials.</p>	<p>All grades 6-8 Topic uDemonstrate Labs have student safety notes. Hands-On Labs include Procedure Tips for safe investigations. At Grades 6-8, see also Appendix A Safety Symbols in each Student Edition.</p>
<p>3.7.7.A.3 Assess materials for appropriateness of use.</p>	<p>Grade 6 SE/TE: uEngineer It!: Designing to Prevent Destruction, 363</p> <p>Grade 7 SE/TE: uEngineer It!: From Wastewater to Tap Water, 379</p> <p>Grade 8 SE/TE: uEngineer It!, Eating Oil, 213 uEngineer It! Power from the Tides, 459 Design a Solution, 534</p>
<p>3.7.7.B Use appropriate instruments and apparatus to study materials.</p>	
<p>3.7.7.B.1 Select appropriate instruments to measure the size, weight, shape and temperature of living and non-living objects.</p>	<p>Grade 5 SE/TE: Measuring Properties, 9 Visual Literacy Connection, 10-11 Temperature, 29 uConnect Lab, 46 uDemonstrate Lab: How does mass change when you make glop?, 94-97 Science Tools, EM2-EM3</p> <p>Grade 6 SE/TE: Math Toolbox: Measuring Precipitation, 236 Measurement, 498</p>

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<p>(Continued) 3.7.7.B.1 Select appropriate instruments to measure the size, weight, shape and temperature of living and non-living objects.</p>	<p>Grade 7 SE/TE: uDemonstrate Lab: Reaction Research, 132-135 Math Toolbox, Human Malnutrition and Height, 179 Measurement, 550</p> <p>Grade 8 SE/TE: uDemonstrate Lab: Evidence of Chemical Change, 112-115 uDemonstrate Lab: Scaling Down the Solar System, 520-523 Measurement, 530</p>
<p>3.7.7.B.2 Apply knowledge of different measurement systems to measure and record objects' properties.</p>	<p>Grade 5 SE/TE: Local-to-Global Connection, 6 Measuring Properties, 9 Quest Check-In Lab: How can you compare the properties of matter?, 32-33 Quest Findings, 34 Keeping Track of Time, 302 Science Tools, EM2-EM3</p> <p>Grade 6 SE/TE: Connect It!, 14 Quest Connection, 14 Weight, 15 Expressing Weight, Mass, and Volume, 15-17 Volume, 17 Measurement, 498</p> <p>Grade 7 SE/TE: Math Toolbox, Relationships in an Energy Pyramid, 211 Math Toolbox: Natural Gas Consumption in the U. S., 296 Math Toolbox, Applying Ohm's Law, 508 Measurement, 550</p> <p>Grade 8 SE/TE: Math Toolbox: Determining Surface Area, 86 Math Toolbox: The Relationship Between Weight and Mass, 156</p>

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Continued 3.7.7.B.2 Apply knowledge of different measurement systems to measure and record objects' properties.	Math Toolbox: Homologous Anatomical Structures, 273 Math Toolbox: Temperature and Altitude, 386 uDemonstrate Lab: Scaling Down the Solar System, 520-523 Measurement, 530
3.7.7.C Explain and demonstrate basic computer operations and concepts.	
3.7.7.C.1 Know specialized computer applications used in the community.	Grade 5 SE/TE: Digital Tools, EM3 Grade 6 SE/TE: Aerial Photography, 194 Satellite Imagery, 194 GPS, 195 Grade 7 SE/TE: Lesson 3 Check, 534 Topic Review and Assess, 536-537 uDemonstrate Lab: Over and Out, 540-543 Grade 8 SE/TE: Case Study: Finding Your Way with GPS, 138-139 Grade 8 TE Only: Professional Development, Beyond the Content, 382
3.7.7.C.2 Describe the function of advanced input and output devices (e.g., scanners, video images, plotters, projectors) and demonstrate their use.	This standard is not addressed in Elevate Science.
3.7.7.C.3 Demonstrate age appropriate keyboarding skills and techniques.	This standard is not addressed in Elevate Science.
3.7.7.D Apply computer software to solve specific problems.	
3.7.7.D.1 Identify software designed to meet specific needs (e.g., Computer Aided Drafting, design software, tutorial, financial, presentation software).	Supporting content: Grade 5 SE/TE: uEngineer It! Coding Moon Phases, 304-305 uEngineer It!: A Code for Plant Matter, 336-337 Grade 5 TE Only: 21 st Century Skills: Using Technology to Communicate, 207, 217, 366

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3.7.7.D.2 Identify and solve basic software problems relevant to specific software applications.	These standards are not addressed in Elevate Science.
3.7.7.D.3 Identify basic multimedia applications.	
3.7.7.D.4 Demonstrate a basic knowledge of desktop publishing applications.	
3.7.7.D.5 Apply intermediate skills in utilizing word processing, database and spreadsheet software.	
3.7.7.D.6 Apply basic graphic manipulation techniques.	
3.7.7.E Explain basic computer communications systems.	
3.7.7.E.1 Describe the organization and functions of the basic parts that make up the World Wide Web.	This standard is not addressed in Elevate Science.
3.7.7.E.2 Apply advanced electronic mail functions.	Grade 7 SE/TE: Roger That, 530 Grade 7 TE Only: Investigate: Connect to the Real World: Cell Phones, 527 Collaborate with Colleagues, 528
3.7.7.E.3 Apply basic on-line research techniques to solve a specific problem.	Grade 6 SE/TE: Literacy Connection: Use Information, 143 Literacy Connection: Evaluate Media, 360 Literacy Connection: Gather Information, 444
3.8.7 Science, Technology and Human Endeavors	
3.8.7.A Explain how sciences and technologies are limited in their effects and influences on society.	Grade 5 SE/TE: Solve It with Science, 171 Literacy Connection: A Very Old System, 235 Grade 6 SE/TE: uEngineer It!: Examining Earth’s Interior from Space, 291 Grade 7 SE/TE: uEngineer It!, Artificial Skin, 81 uEngineer It!, Eating Oil, 213

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<p>Continued 3.8.7.A Explain how sciences and technologies are limited in their effects and influences on society.</p>	<p>Grade 8 SE/TE: uEngineer It!: Making Water Safe to Drink, 77 uEngineer It!: Changing Climate Change, 415</p>
<p>3.8.7.A.1 Identify and describe the unavoidable constraints of technological design.</p>	<p>Grade 5 SE/TE: uEngineer It!: Foam Sweet Foam, 76-77 uEngineer It!: A New Home, 118-119 uEngineer It!: What's with the dust?, 244-245 uDemonstrate Lab: How can you model matter cycles in the Earth system?, 402-403 Defining Problems, EM10</p> <p>Grade 6 SE/TE: uEngineer It!: A Daring Bridge, 197 Question It!: Moving Sand Dunes, 401 uEngineer It!: Designing to Prevent Construction, 363</p> <p>Grade 7 SE/TE: uDemonstrate Lab: Over and Out, 540-543</p> <p>Grade 8 SE/TE: Design It!, Adapting for Climate Change, 412 Design Challenge, 495</p>
<p>3.8.7.A.2 Identify changes in society as a result of a technological development.</p>	<p>Grade 5 SE/TE: uEngineer It!: Making Energy the Solar Way, 194-195 Engineering Connection, 386</p> <p>Grade 6 SE/TE: uEngineer It!: Catching Water with a Net, 239 uEngineer It!: Designing to Prevent Construction, 363</p> <p>Grade 7 SE/TE: Case Study: Super Ultra High Definition!, 424-425 Extraordinary Science, Beam Me Up!, 535</p>

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<p>Continued 3.8.7.A.2 Identify changes in society as a result of a technological development.</p>	<p>Grade 8 SE/TE: uEngineer It!: Making Water Safe to Drink, 77 uEngineer It!: Windmills of the Future, 361 uEngineer It!: Power from the Tides, 459</p>
<p>3.8.7.A.3 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.</p>	<p>Grade 5 SE/TE: Engineering Connection, 386</p> <p>Grade 6 SE/TE: uEngineer It!: Gathering Speed with Superconductors, 33 uEngineer It!: Catching Water with a Net, 239 uEngineer It!: Designing to Prevent Construction, 363 uEngineer It!: A Disease Becomes a Cure, 471</p> <p>Grade 7 SE/TE: uEngineer It!, Artificial Skin, 81 uEngineer It!, Eating Oil, 213 Quest Kickoff: Should an Animal Crossing Be Constructed in My Community?, 234-235 Quest Connection, 254 Quest Connection, 268 Design It!: Ecological Restoration, 275 Topic Review and Assess, 536-537</p> <p>Grade 8 SE/TE: uEngineer It!: Making Water Safe to Drink, 77 uEngineer It! Generating Energy from Potholes, 149 uEngineer It! Windmills of the Future, 361 uEngineer It! Power from the Tides, 459</p>

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3.8.7.B Explain how human ingenuity and technological resources satisfy specific human needs and improve the quality of life.	
3.8.7.B.1 Identify interrelationships between systems and resources.	<p>Grade 5 SE/TE: uEngineer It!: Ecosystems in a Box, 394-395</p> <p>Grade 6 SE/TE: uEngineer It!: Catching Water with a Net, 239</p> <p>Grade 7 SE/TE: Ecosystem Services, 269-272</p> <p>Grade 8 SE/TE: uEngineer It! Windmills of the Future, 361 uEngineer It! Power from the Tides, 459</p>
3.8.7.B.2 Identify and describe the resources necessary to solve a selected problem in a community and improve the quality of life.	<p>Grade 5 SE/TE: Quest Check-In Lab: How can you make a new and improved formula?, 86-87 uInvestigate Lab: How can you find water underground?, 155 STEM Quest Check-In Lab: How do we filter water?, 160-161</p> <p>Grade 6 SE/TE: uEngineer It!: Catching Water with a Net, 239</p> <p>Grade 7 SE/TE: Quest Kickoff: Should an Animal Crossing Be Constructed in My Community?, 234-235 Design It!: Ecological Restoration, 275 uEngineer It!, From Wastewater to Tap Water, 379</p> <p>Grade 8 SE/TE: Quest Kickoff: How can you take the crash out of a collision?, 118 Quest Kickoff: How can you sell a new fruit?, 170</p>

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<p>3.8.7.B.3 identify and explain specific examples of how agricultural science has met human needs and has improved the quality of life.</p>	<p>Grade 5 SE/TE: Quest Kickoff: Take Care of Earth – It’s Our Home!, 182-183 uInvestigate Lab: Where are the metals?, 187 uInvestigate Lab: What happens to substances over time?, 205 Quest Check-In Lab: How do building materials affect energy efficiency?, 210-211</p> <p>Grade 7 SE/TE: uEngineer It!, An Artificial Leaf, 49 uEngineer It!, Eating Oil, 213 Other Water Resources, 323 Balancing Needs, 344 Agriculture, 358 Development, 358</p>
<p>3.8.7.C Identify the pros and cons of applying technological and scientific solutions to address problems and the effect upon society.</p>	
<p>3.8.7.C.1 Describe the positive and negative expected and unexpected effects of specific technological developments.</p>	<p>Grade 7 SE/TE: uEngineer It!, A Life-Saving Mistake, 513 Case Study, Super Ultra High Definition, 524-525</p> <p>Grade 8 SE/TE: Properties of Pure Substances, 101 Accidental Synthetics, Figure 2, 101 Preserving Food, Figure 3, 103 Quest Check-In, 105 Case Study: Is Plastic Really So Fantastic? , 106-107</p>

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<p>3.8.7.C.2 Describe ways technology extends and enhances human abilities.</p>	<p>Grade 5 SE/TE: STEM Connection, 204 STEM Connection, 328</p> <p>Grade 6 SE/TE: uEngineer It!: Prosthetics on the Move, 107</p> <p>Grade 7 SE/TE: uEngineer It!, Artificial Skin, 81 uEngineer It!, A Life-Saving Mistake, 513</p> <p>Grade 8 SE/TE: Impact of Synthetic Materials, 103-104 uEngineer It! Windmills of the Future, 361 uEngineer It! Power from the Tides, 459</p>