**Standards Map for Kindergarten Through Grade Eight**

**Grade 4– California Next Generation Science Standards**

**4-LS1 From Molecules to Organisms: Structures and Processes**

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| **Science and Engineering Practices****Disciplinary Core Ideas****Crosscutting Concepts** | **Publisher Citations** | **Meets Standard** | **Reviewer Comments, Citations, and Questions** | **Performance Expectation** | **Publisher Citations** | **Meets Standard** | **Reviewer Comments, Citations, and Questions** |
| **Y** | **N** | **Y** | **N** |
| **SEP** | **Engaging in Argument from Evidence**Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s).* Construct an argument with evidence, data, and/or a model. (4-LS1-1)
 | **KEY:****M = Module** **DQ = Driving Question** **L = Lesson** **TE = Teacher Edition****TB = Student Edition known as the Twig Book****LR = Leveled Reader****EXAMPLE ONE****Grade 4 Module 5****Super Survivors**M5\_DQ1L3 (TE, TB)L6 (TE, TB)L7 ((TE, TB) |  |  |  | **4-LS1-1.****Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.** [Clarification Statement: Examples of structures could include thorns, stems, roots, colored petals, heart, stomach, lung, brain, and skin. **\*\*Each structure has specific functions within its associated system.**] [*Assessment Boundary: Assessment is limited to macroscopic structures within plant and animal systems.*] | **KEY:****M = Module** **DQ = Driving Question** **L = Lesson** **TE = Teacher Edition****TB = Student Edition known as the Twig Book****LR = Leveled Reader****EXAMPLES****Grade 4 Module 5****Super Survivors**M5\_DQ1L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)L5 (TE, TB)L6 (TE, TB)L7 (TE, TB)Key ResourcesL1 **Amazing Animals: Body Coverings** video; **A Walk in the Forest** Prior-Knowledge Read-Aloud textL2 **Extreme Plants** text (TB)L4 **Parts of a Flower** videoL5 **Breathing** videoL6 **Eating and Drinking** video**Grade 4 Module 5****Super Survivors**M5\_DQ2L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)Key ResourcesL1 **Super Hearing** videoL2 **Touch** videoL3 **Super Sniffers** video**Grade 4 Module 5****Leveled Reader: Amazing Animal Senses**Chapter 1 (LR 2-14) |  |  |  |
| **DCI** | **LS1.A: Structure and Function*** Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction. (4-LS1-1)
 | **EXAMPLE ONE****Grade 4 Module 5****Super Survivors**M5\_DQ1L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)L5 (TE, TB)L6 (TE, TB)L7 (TE, TB)Key ResourcesL1 **Amazing Animals: Body Coverings** videoL4 **Parts of a Flower** videoL5 **Breathing** videoL6 **Eating and Drinking** video**EXAMPLE TWO****Grade 4 Module 5****Super Survivors**M5\_DQ2L1 (TE, TB)L3 (TE, TB)L4 (TE, TB)Key ResourcesL1 **Super Hearing** videoL2 **Touch** videoL3 **Super Sniffers** video |  |  |  |
| **CCC** | **Systems and System Models*** A system can be described in terms of its components and their interactions. (4-LS1-1)
 | **EXAMPLE ONE****Grade 4 Module 5****Super Survivors**M5\_DQ1L4(TE, TB)L5 (TE, TB)**EXAMPLE TWO****Grade 4 Module 5****Super Survivors**M5\_DQ2L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)L4 (TE, TB) |  |  |  |

California Department of Education

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| **Science and Engineering Practices****Disciplinary Core Ideas****Crosscutting Concepts** | **Publisher Citations** | **Meets Standard** | **Reviewer Comments, Citations, and Questions** | **Performance Expectation** | **Publisher Citations** | **Meets Standard** | **Reviewer Comments, Citations, and Questions** |
| **Y** | **N** | **Y** | **N** |
| **SEP** | **Developing and Using Models**Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions.* Use a model to test interactions concerning the functioning of a natural system. (4-LS1-2)
 | **EXAMPLE ONE****Grade 4 Module 5****Super Survivors**M5\_DQ4L2 (TE, TB)**EXAMPLE TWO****Grade 4 Module 5****Super Survivors**M5\_DQ2L1 (TE, TB)L2 (TE, TB)L3 ((TE, TB) |  |  |  | **4-LS1-2.****Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.** [Clarification Statement: Emphasis is on systems of information transfer.] [Assessment Boundary: Assessment does not include the mechanisms by which the brain stores and recalls information or the mechanisms of how sensory receptors function.] | **EXAMPLES****Grade 4 Module 5****Super Survivors**M5\_DQ2L1 (TE, TB)L2 (TE, TB)L3 (TE, TB) 92-100, TB 37-46)Key ResourcesL1 **Super Hearing** videoL2 **Touch** videoL3 **Super Sniffers** video**Grade 4 Module 5****Super Survivors**M5\_DQ4L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)L5 (TE, TB)L6 (TE, TB)Key ResourcesL1 **Optical Illusions** video, **Selective Sight** videoL3 **Bees: Super Sensors, Super Learners** text (TB)L5 **Prey Responses** videoL6 **Dragonfly Reaction Time** video**Grade 4 Module 5****Super Survivors****Animal Senses**Benchmark Assessment(TE 206-209)**Grade 4 Module 5****Leveled Reader: Amazing Animal Senses**Chapter 1 (LR 2-14) |  |  |  |
| **DCI** | **LS1.D: Information Processing*** Different sense receptors are specialized for particular kinds of information, which may be then processed by the animal’s brain. Animals are able to use their perceptions and memories to guide their actions. (4-LS1-2)
 | **EXAMPLE ONE****Grade 4 Module 5****Super Survivors**M5\_DQ2L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)Key ResourcesL1 **Super Hearing** videoL2 **Touch** videoL3 **Super Sniffers** video |  |  |  |
| **CCC** | **Systems and System Models*** A system can be described in terms of its components and their interactions. (4-LS1-2)
 | **EXAMPLE ONE****Grade 4 Module 5****Super Survivors**M5\_DQ2L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)**EXAMPLE TWO****Grade 4 Module 5****Super Survivors**M5\_DQ1L4 (TE, TB)L5 (TE, TB) |  |  |  |

**4-ESS1 Earth’s Place in the Universe**

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| **Y** | **N** | **Y** | **N** |
| **SEP** | **Constructing Explanations and Designing Solutions**Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems.* Identify the evidence that supports particular points in an explanation. (4-ESS1-1)
 | **EXAMPLE ONE****Grade 4 Module 3****Time-Traveling Tour Guide**M3\_DQ2L2 (TE, TB)L3 (TE, TB)L4 (TE, TB) |  |  |  | **4-ESS1-1.****Identify evidence from patterns in rock formations and fossils in rock formations and fossils in rock layers for changes in a landscape over time to support an explanation for changes in a landscape over time.** [Clarification Statement: Examples of evidence from patterns could include rock layers with shell fossils above rock layers with plant fossils and no shells, indicating a change from land to water over time; and a canyon with different rock layers in the walls and a river in the bottom, indicating that over time a river cut through the rock.] [*Assessment Boundary: Assessment does not include specific knowledge of the mechanism of rock formation or memorization of specific rock formations and layers. Assessment is limited to relative time.*] | **EXAMPLES****Grade 4 Module 3****Time-Traveling Tour Guide**M3\_ DQ2L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)Key ResourcesL1 **Rock Layers** investigationL2 **Layers of Time: Part 1** videoL3 **Layers of Time: Part 2** videoL4 **How Did the Grand Canyon Form?** video**Grade 4 Module 3****Leveled Reader: Sculpting Landscapes**Chapter 1 (LR 2-14) |  |  |  |
| **DCI** | **ESS1.C: The History of Planet Earth*** Local, regional, and global patterns of rock formations reveal changes over time due to earth forces, such as earthquakes. The presence and location of certain fossil types indicate the order in which rock layers were formed. (4-ESS1-1)
 | **EXAMPLE ONE****Grade 4 Module 3****Time-Traveling Tour Guide**M3\_DQ2L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)Key ResourcesL1 **Rock Layers** investigation**EXAMPLE TWO****Grade 4 Module 3****Leveled Reader: Sculpting Landscapes**Chapter 1 (LR 2-14) |  |  |  |
| **CCC** | **Patterns*** Patterns can be used as evidence to support an explanation. (4-ESS1-1)
 | **EXAMPLE ONE****Grade 4 Module 3****Time-Traveling Tour Guide**M3\_DQ2L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)Key ResourcesL1 **Rock Layers** investigation |  |  |  |
| **CCC** | ***Connections to Nature of Science******Scientific Knowledge Assumes an Order and Consistency in Natural Systems**** Science assumes consistent patterns in natural systems. (4-ESS1-1)
 | **EXAMPLE ONE****Grade 4 Module 3****Time-Traveling Tour Guide**M3\_DQ2L1 (TE, TB)L2 (TE, TB)L4 (TE, TB)**EXAMPLE TWO****Grade 4 Module 3****Time-Traveling Tour Guide**M3\_DQ1L2 (TE, TB) |  |  |  |  |  |  |  |

**4-ESS2 Earth’s Systems**

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| **Y** | **N** | **Y** | **N** |
| **SEP** | **Planning and Carrying Out Investigations**Planning and carrying out investigations to answer questions or test solutions to problems in 3–5 builds on K–2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions. * Make observations and/or measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon. (4-ESS2-1)
 | **EXAMPLE ONE****Grade 4 Module 3****Time-Traveling Tour Guide**M3\_DQ3L1 (TE, TB)L2 (TE, TB)L3 (TE, TB))Key ResourcesL1-3 **Stream Tray** model**EXAMPLE TWO****Grade 4 Module 3****Time-Traveling Tour Guide**M3\_DQ4L2 (TE, TB))L3 (TE, TB)L5 (TE, TB))**EXAMPLE THREE****Grade 4 Module 3****Time-Traveling Tour Guide**M3\_DQ1L2 (TE, TB))**EXAMPLE FOUR****Grade 4 Module 3****Sculpting Landscapes** Benchmark Assessment(TE 164-171)Key Resources**Erosion and Weathering** video |  |  |  | **4-ESS2-1.****Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.** [Clarification Statement: Examples of variables to test could include angle of slope in the downhill movement of water, amount of vegetation, speed of wind, relative rate of deposition, cycles of freezing and thawing of water, cycles of heating and cooling, and volume of water flow.] [*Assessment Boundary: Assessment is limited to a single form of weathering or erosion.]* | **EXAMPLES****Grade 4 Module 3****Time-Traveling Tour Guide**M3\_DQ4L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)L5 (TE, TB)L6 (TE, TB)Key ResourcesL2 **El Capitan** video; **Glacial Erosion** model L3 **Wind Erosion** model; **Wind Erosion** video**Grade 4 Module 3****Time-Traveling Tour Guide**M3\_DQ3L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)Key ResourcesL1-3 **Stream Tray** model**Grade 4 Module 3****Time-Traveling Tour Guide**M3\_DQ1L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)Key ResourcesL2 **Time-Lapse Tour** interactive; **Our Changing Planet** Prior-Knowledge Read-Aloud textL4 **Time-Traveling Tour Guides** **Trailer** video**Grade 4 Module 3****Sculpting Landscapes** Benchmark Assessment(TE 164-171)Key Resources**Erosion and Weathering** video**Grade 4 Module 3****Leveled Reader:** **Sculpting Landscapes**Chapter 3 (LR 22-30) |  |  |  |
| **DCI** | **ESS2.A: Earth Materials and Systems*** Rainfall helps to shape the land and affects the types of living things found in a region. Water, ice, wind, living organisms, and gravity break rocks, soils, and sediments into smaller particles and move them around. (4-ESS2-1)
 | **EXAMPLE ONE****Grade 4 Module 3****Time-Traveling Tour Guide**M3\_DQ4L1 (TE, TB) (TE, TB) L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)L5 (TE, TB)L6 (TE, TB)**EXAMPLE TWO****Grade 4 Module 3****Time-Traveling Tour Guide**M3\_DQ1L1 (TE, TB)L2 (TE, TB)L4 (TE, TB)**EXAMPLE THREE****Grade 4 Module 3****Time-Traveling Tour Guide**M3\_DQ3L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)Key ResourcesL1-3 **Stream Tray** modelL3 **The Power of Water** video**EXAMPLE FOUR****Grade 4 Module 3****Leveled Reader: Sculpting Landscapes**Chapter 2 (LR 14-20) |  |  |  |
| **DCI** | **ESS2.E: Biogeology*** Living things affect the physical characteristics of their regions. (4-ESS2-1)
 | **EXAMPLE ONE****Grade 4 Module 3****Time-Traveling Tour Guide**M3\_DQ1L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)Key ResourcesL2 **Time-Lapse Tour** interactive **Our Changing Planet** Prior-Knowledge Read-Aloud text**EXAMPLE TWO****Grade 4 Module 3****Time-Traveling Tour Guide**M3\_DQ3L2 (TE, TB)**EXAMPLE THREE****Grade 4 Module 3****Time-Traveling Tour Guide**M3\_DQ4L6 (TE, TB) |  |  |  |
| **CCC** | **Cause and Effect*** Cause and effect relationships are routinely identified, tested, and used to explain change. (4-ESS2-1)
 | **EXAMPLE ONE****Grade 4 Module 3****Time-Traveling Tour Guide**M3\_DQ4L1 (TE, TB)L2 (TE, TB)L5 (TE, TB)L6 (TE, TB)**EXAMPLE TWO****Grade 4 Module 3****Time-Traveling Tour Guide**M3\_DQ1L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)**EXAMPLE THREE****Grade 4 Module 3****Time-Traveling Tour Guide**M3\_DQ3L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)**EXAMPLE FOUR****Grade 4 Module 3****Sculpting Landscapes** Benchmark Assessment(TE 164-171)Key Resources**Erosion and Weathering** video |  |  |  |

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| **Y** | **N** | **Y** | **N** |
| **SEP** | **Analyzing and Interpreting Data**Analyzing data in 3–5 builds on K–2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used.* Analyze and interpret data to make sense of phenomena using logical reasoning. (4-ESS2-2)
 | **EXAMPLE ONE****Grade 4 Module 4****Earthquake Engineering**M4\_DQ2L1 (TE, TB)L2 (TE, TB) L3 (TE, TB)Key Resources L1-3 **Earth Explorer** interactive**EXAMPLE TWO****Grade 4 Module 4****Earthquake Engineering****Analyzing Maps** Benchmark Assessment(TE 94-98)**EXAMPLE THREE****Grade 4 Module 4****Earthquake Engineering**M4\_DQ1L2 (TE, TB)**EXAMPLE FOUR****Grade 4 Module 3****Time-Traveling Tour Guide**M3\_DQ3L1 (TE, TB) |  |  |  | **4-ESS2-2.****Analyze and interpret data from maps to describe patterns of Earth’s features.** [Clarification Statement: Maps can include topographic maps of Earth’s land and ocean floor, as well as maps of the locations of mountains, continental boundaries, volcanoes, and earthquakes.] | **EXAMPLES****Grade 4 Module 4****Earthquake Engineering**M4\_DQ2L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)Key ResourcesL1-3 **Earth Explorer** interactiveL3 **Where on Earth are You?** video L4 **California Earthquakes** text (TB)**Grade 4 Module 4****Earthquake Engineering****Analyzing Maps** Benchmark Assessment(TE 94-98)**Grade 4 Module 3****Time-Traveling Tour Guide**M3\_DQ3L1 (TE, TB)**Grade 4 Module 3****Time-Traveling Tour Guide**M3\_DQ1L2 ((TE, TB)**Grade 4 Module 4****Leveled Reader: Shake, Rattle, and Roll**Chapter 1 (LR 2-15) |  |  |  |
| **DCI** | **ESS2.B: Plate Tectonics and Large-Scale System Interactions*** The locations of mountain ranges, deep ocean trenches, ocean floor structures, earthquakes, and volcanoes occur in patterns. Most earthquakes and volcanoes occur in bands that are often along the boundaries between continents and oceans. Major mountain chains form inside continents or near their edges. Maps can help locate the different land and water features areas of Earth. (4-ESS2-2)
 | **EXAMPLE ONE****Grade 4 Module 4****Earthquake Engineering**M4\_DQ2L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)L5 (TE, TB)Key Resources L1-3 **Earth Explorer** interactiveL4 **California Earthquakes** text (TB)**EXAMPLE TWO****Grade 4 Module 4****Earthquake Engineering****Analyzing Maps** Benchmark Assessment(TE 94-98) |  |  |  |
| **CCC** | **Patterns*** Patterns can be used as evidence to support an explanation. (4-ESS2-2)
 | **EXAMPLE ONE****Grade 4 Module 4****Earthquake Engineering**M4\_DQ2L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)L5 (TE, TB)Key ResourcesL1-3 **Earth Explorer** interactiveL4 **California Earthquakes** text (TB)**EXAMPLE TWO****Grade 4 Module 4****Earthquake Engineering****Analyzing Maps** Benchmark Assessment(TE 94-98) |  |  |  |

**4-ESS3 Earth and Human Activity**

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| **Y** | **N** | **Y** | **N** |
| **SEP** | **Obtaining, Evaluating, and Communicating Information**Obtaining, evaluating, and communicating information in 3–5 builds on K–2 experiences and progresses to evaluate the merit and accuracy of ideas and methods.* Obtain and combine information from books and other reliable media to explain phenomena. (4-ESS3-1)
 | **EXAMPLE ONE****Grade 4 Module 2****Sparks Energy, Inc.**M2\_DQ3L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)L5 (TE, TB)L6 (TE, TB)L7 (TE, TB)Key ResourcesL1 **Energy in The United States** text (TB)L3 **Fuels** video; **Fossil Fuels** text (TB)**EXAMPLE TWO****Grade 4 Module 2****Benchmark Assessment: Nuclear Energy**(TE 202-206)**EXAMPLE THREE****Grade 4 Module 2****Sparks Energy, Inc.**M2\_DQ2L1 (TE, TB)L5 (TE, TB)L9 (TE, TB))L10 (TE, TB)Key ResourcesL1 **Solar Power** videoL5 **Wind Turbines** video; **Interview with Dr. Anoushka Sivaraman** text (TB)  |  |  |  | **4-ESS3-1.****Obtain and combine information** **to describe that energy and fuels are derived from natural resources and their uses affect the environment.** [Clarification Statement: Examples of renewable energy resources could include wind energy, water behind dams, and sunlight; non-renewable energy resources are fossil fuels and fissile materials. Examples of environmental effects could include loss of habitat due to dams, loss of habitat due to surface mining, and air pollution from burning of fossil fuels.] | **EXAMPLES****Module 4.2****Grade 4 Module 2****Sparks Energy, Inc.**M2\_DQ3L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)L5 ((TE, TB)L6 (TE, TB))L7 (TE, TB))Key ResourcesL1 **Energy in The United States** text (TB)L3 **Fuels** video; **Fossil Fuels** text (TB)L5 **Energy Debate** videoL6 **Energy Debate** Activity**Grade 4 Module 2 Benchmark Assessment: Nuclear Energy**(TE 202-206)**Grade 4 Module 2****Sparks Energy, Inc.**M2\_DQ1L3 (TE, TB)**Grade 4 Module 2****Sparks Energy, Inc.**M2\_DQ2L1 (TE, TB)L5 (TE, TB)L9 (TE, TB)L10 (TE, TB)Key ResourcesL1 **Solar Power** videoL5 **Wind Turbines** video; **Interview with Dr. Anoushka Sivaraman** text (TB)L9 **Wind Turbine** evaluationL10 **Hydroelectric Power Station** video**Grade 4 Module 2****Leveled Reader:** **Renewable Energy**Chapter 1 (LR 2-13) |  |  |  |
| **DCI** | **ESS3.A: Natural Resources** * Energy and fuels that humans use are derived from natural sources, and their use affects the environment in multiple ways. Some resources are renewable over time, and others are not. (4-ESS3-1)
 | **EXAMPLE ONE****Grade 4 Module 2****Sparks Energy, Inc.**M2\_DQ2L1 (TE, TB)L5 (TE, TB)L10 (TE, TB)**EXAMPLE TWO****Grade 4 Module 2****Sparks Energy, Inc.**M2\_DQ3L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)L5 (TE, TB)L6 (TE, TB)L7 (TE, TB))Key ResourcesL1 **Energy in The United States** text (TB)L3 **Fuels** video; **Fossil Fuels** text (TB)**EXAMPLE THREE****Grade 4 Module 2****Benchmark Assessment:** **Nuclear Energy**(TE 202-206)**EXAMPLE FOUR****Grade 4 Module 2****Leveled Reader: Renewable Energy**Chapter 3 (LR 22-29) |  |  |  |
| **CCC** | **Cause and Effect** * Cause and effect relationships are routinely identified and used to explain change. (4-ESS3-1)
 | **EXAMPLE ONE****Grade 4 Module 2****Sparks Energy, Inc.**M2\_DQ3L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)L5 (TE, TB)L6 (TE, TB)L7 (TE, TB)**EXAMPLE TWO****Grade 4 Module 2****Benchmark Assessment:** **Nuclear Energy**(TE 202-206) |  |  |  |
| **CCC** | ***Connections to Engineering, Technology,******and Applications of Science*****Interdependence of Science, Engineering, and Technology*** Knowledge of relevant scientific concepts and research findings is important in engineering. (4-ESS3-1)
 | **EXAMPLE ONE****Grade 4 Module 2****Sparks Energy, Inc.**M2\_DQ2L5 (TE, TB)L9 (TE, TB)**EXAMPLE TWO****Grade 4 Module 2****Sparks Energy, Inc.**M2\_DQ3L7 (TE, TB) |  |  |  |
| **CCC** | **Influence of Engineering, Technology, and Science on Society and the Natural World*** Over time, people’s needs and wants change, as do their demands for new and improved technologies. (4-ESS3-1)
 | **EXAMPLE ONE****Grade 4 Module 2****Sparks Energy, Inc.**M2\_DQ2L1 (TE, TB)**EXAMPLE TWO****Grade 4 Module 2****Sparks Energy, Inc.**M2\_DQ3L1 (TE, TB)L6 (TE, TB) |  |  |  |

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| **Y** | **N** | **Y** | **N** |
| **SEP** | **Constructing Explanations and Designing Solutions**Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems.* Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design solution. (4-ESS3-2)
 | **EXAMPLE ONE****Grade 4 Module 4****Earthquake Engineering**M4\_DQ4L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)**EXAMPLE TWO****Grade 4 Module 4****Earthquake Engineering**M4\_DQ5L3 (TE, TB)L4 (TE, TB)**EXAMPLE THREE****Grade 4 Module 4****Earthquake Engineering**M4\_DQ6L3 (TE, TB)**EXAMPLE FOUR****Grade 4 Module 3****Time-Traveling Tour Guide**M3\_DQ4L4 (TE, TB)L6 (TE, TB)) |  |  |  | **4-ESS3-2.****Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.\*** [Clarification Statement: Examples of solutions could include designing an earthquake resistant building and improving monitoring of volcanic activity.] [*Assessment Boundary: Assessment is limited to earthquakes, floods, tsunamis, and volcanic eruptions.*] | **EXAMPLES****Grade 4 Module 3****Time-Traveling Tour Guide**M3\_DQ4L4 (TE, TB)L6 (TE, TB)**Grade 4 Module 4****Earthquake Engineering**M4\_DQ4L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)**Grade 4 Module 4****Earthquake Engineering**M4\_DQ5L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)Key Resources L2 **LAX Engineer** videoL3 **Made in Japan: Earthquake-Proof Homes** text**Grade 4 Module 4****Earthquake Engineering**M4\_DQ6L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)**Grade 4 Module 3****Sculpting Landscapes** Benchmark Assessment(TE 164-171)Key Resources**Erosion and Weathering** video**Grade 4 Module 4****Earthquake Solutions** Benchmark Assessment(TE 194-197)**Grade 4 Module 4****Leveled Reader:** **Shake, Rattle, and Roll**Chapter 3 (LR 22-30) |  |  |  |
| **DCI** | **ESS3.B: Natural Hazards*** A variety of hazards result from natural processes (e.g., earthquakes, tsunamis, volcanic eruptions). Humans cannot eliminate the hazards but can take steps to reduce their impacts. (4-ESS3-2) (Note: This Disciplinary Core Idea can also be found in 3.WC.)
 | **EXAMPLE ONE****Grade 4 Module 4****Earthquake Engineering**M4\_DQ5L2 (TE, TB)L3 (TE, TB)**EXAMPLE TWO****Grade 4 Module 3****Time-Traveling Tour Guide**M3\_DQ4L4 (TE, TB)L6 (TE, TB)**EXAMPLE THREE****Grade 4 Module 3****Leveled Reader: Sculpting Landscapes**Chapter 1 (LR 2-13) |  |  |  |
| **DCI** | **ETS1.B: Designing Solutions to Engineering Problems*** Testing a solution involves investigating how well it performs under a range of likely conditions. (secondary to 4-ESS3-2)
 | **EXAMPLE ONE****Grade 4 Module 4****Earthquake Engineering**M4\_DQ4L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)**EXAMPLE TWO****Grade 4 Module 4****Earthquake Engineering**M4\_DQ5L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)Key Resources L2 **LAX Engineer** videoL3 **Made in Japan: Earthquake-Proof Homes** text (TB)**EXAMPLE THREE****Grade 4 Module 4****Earthquake Engineering**M4\_DQ6L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)**EXAMPLE FOUR****Grade 4 Module 3****Time-Traveling Tour Guide**M3\_DQ4L4 (TE 142-147, TB 55-56)L6 (TE 156-163, TB 61-66)**EXAMPLE FIVE****Grade 4 Module 4****Leveled Reader: Shake, Rattle, and Roll**Chapter 3 (LR 22-30) |  |  |  |
| **CCC** | **Cause and Effect** * Cause and effect relationships are routinely identified, tested, and used to explain change. (4-ESS3-2)
 | **EXAMPLE ONE****Grade 4 Module 3****Time-Traveling Tour Guide**M3\_DQ4L6 (TE, TB)**EXAMPLE TWO****Grade 4 Module 3****Sculpting Landscapes** Benchmark AssessmentKey Resources**Erosion and Weathering** video**EXAMPLE THREE****Grade 4 Module 4****Earthquake Solutions** Benchmark Assessment(TE 194-197) |  |  |  |
| **CCC** | ***Connections to Engineering, Technology,******and Applications of Science*****Influence of Engineering, Technology, and Science on Society and the Natural World*** Engineers improve existing technologies or develop new ones to increase their benefits, to decrease known risks, and to meet societal demands. (4-ESS3-2)
 | **EXAMPLE ONE****Grade 4 Module 4****Earthquake Engineering**M4\_DQ5L2 (TE, TB)L3 (TE, TB)Key Resources L2 **LAX Engineer** videoL3 **Made in Japan: Earthquake-Proof Homes** text**EXAMPLE TWO****Grade 4 Module 3****Time-Traveling Tour Guide**M3\_DQ4L4 (TE, TB)L6 (TE, TB) |  |  |  |

**4-PS3 Energy**

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| **Science and Engineering Practices****Disciplinary Core Ideas****Crosscutting Concepts** | **Publisher Citations** | **Meets Standard** | **Reviewer Comments, Citations, and Questions** | **Performance Expectation** | **Publisher Citations** | **Meets Standard** | **Reviewer Comments, Citations, and Questions** |
| **Y** | **N** | **Y** | **N** |
| **SEP** | **Constructing Explanations and Designing Solutions**Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems.* Use evidence (e.g., measurements, observations, patterns) to construct an explanation. (4-PS3-1)
 | **EXAMPLE ONE****Grade 4 Module 1****Egg Racers**M1\_DQ1L2 (TE, TB)**EXAMPLE TWO****Grade 4 Module 1****Egg Racers**M1\_DQ2L1 (TE, TB)L3 (TE, TB)**EXAMPLE THREE****Grade 4 Module 1****Egg Racers**M1\_DQ3L3 (TE, TB) |  |  |  | **4-PS3-1.****Use evidence to construct an explanation relating the speed of an object to the energy of that object. [\*\*Clarification Statement: Examples of evidence relating speed and energy could include change of shape on impact or other results of collisions.]** [Assessment Boundary: Assessment does not include quantitative measures of changes in the speed of an object or on any precise or quantitative definition of energy.] | **EXAMPLES****Grade 4 Module 1****Egg Racers**M1\_DQ1L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)L5 (TE, TB)Key ResourcesL3 **Energy All Around** text (TB)L4 **Transferring Energy** investigationL5 **Balloon Car** investigation**Grade 4 Module 1****Egg Racers**M1\_DQ2L1 (TE, TB))L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)Key Resources L1 **Energy Stations** investigationL2 **Rubber-Band-Powered Car** investigation**Grade 4 Module 1****Egg Racers**M1\_DQ3L3 (TE, TB)**Grade 4 Module 1****Leveled Reader: The Science of Baseball**Chapter 3 (LR 22-30) |  |  |  |
| **DCI** | **PS3.A: Definitions of Energy** * The faster a given object is moving, the more energy it possesses. (4-PS3-1)
 | **EXAMPLE ONE****Grade 4 Module 1****Egg Racers**M1\_DQ1L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)L5 (TE, TB)**EXAMPLE TWO****Grade 4 Module 1****Egg Racers**M1\_DQ2L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)**EXAMPLE THREE****Grade 4 Module 1****Egg Racers**M1\_DQ3L3 (TE, TB) |  |  |  |
| **CCC** | **Energy and Matter*** Energy can be transferred in various ways and between objects. (4-PS3-1)
 | **EXAMPLE ONE****Grade 4 Module 1****Egg Racers**M1\_DQ1L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)L5 (TE, TB)Key ResourcesL3 **Energy All Around** text (TB)L4 **Transferring Energy** investigationL5 **Balloon Car** investigation**EXAMPLE TWO****Grade 4 Module 1****Egg Racers**M1\_DQ2L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)**EXAMPLE THREE****Grade 4 Module 1****Egg Racers**M1\_DQ3L3 (TE, TB) |  |  |  |

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| **Science and Engineering Practices****Disciplinary Core Ideas****Crosscutting Concepts** | **Publisher Citations** | **Meets Standard** | **Reviewer Comments, Citations, and Questions** | **Performance Expectation** | **Publisher Citations** | **Meets Standard** | **Reviewer Comments, Citations, and Questions** |
| **Y** | **N** | **Y** | **N** |
| **SEP** | **Planning and Carrying Out Investigations** Planning and carrying out investigations to answer questions or test solutions to problems in 3–5 builds on K–2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions.* Make observations to produce data to serve as the basis for evidence for an explanation of a phenomenon or test a design solution. (4-PS3-2)
 | **EXAMPLE ONE****Grade 4 Module 2****Sparks Energy, Inc.**M2\_DQ1L4 (TE, TB)L5 (TE, TB)L6 (TE, TB)**EXAMPLE TWO****Grade 4 Module 2****Sparks Energy, Inc.**M2\_DQ2L6 (TE, TB)L7 (TE, TB)L8 (TE, TB)Key ResourcesL6 **Building Wind Turbine** modelL7 **Improving Wind Turbine** modelL8 **Testing Wind Turbine** model**EXAMPLE THREE****Grade 4 Module 5****Super Survivors**M5\_DQ5L1 (TE, TB)L4 (TE, TB)Key ResourcesL1 **Save Our Ship** video |  |  |  | **4-PS3-2.****Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.** [Assessment Boundary: Assessment does not include quantitative measurements of energy.] | **EXAMPLES****Grade 4 Module 2****Sparks Energy, Inc.**M2\_DQ2L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)L6 (TE, TB))L7 (TE, TB)L8 (TE, TB)Key ResourcesL3 **Building** **Circuits** investigationL4 **Building** **Circuits** investigation L6 **Building Wind Turbine** modelL7 **Improving Wind Turbine** modelL8 **Testing Wind Turbine** model**Grade 4 Module 5****Super Survivors**M5\_DQ5L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)L7 (TE, TB)Key ResourcesL1 **Save Our Ship** videoL2 **Long Distance Communication** text (TB)L4 **How Do Sounds Travel?** video**Grade 4 Module 2****Sparks Energy, Inc.**M2\_DQ1L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)L5 (TE, TB)L6 (TE, TB)L7 (TE, TB)Key ResourcesL1 **Humans and Earth** Prior-Knowledge Read-Aloud text; **Sparks Energy, Inc. Trailer** videoL2 **Wind and Water Power** videoL3 **How Can We Use the Sun’s Energy?** text (TB)L4 **Melting Ice** investigationL5 **Solar Cookers** interactive |  |  |  |
| **DCI** | **PS3.A: Definitions of Energy** * Energy can be moved from place to place by moving objects or through sound, light, or electric currents. (4-PS3-2)
 | **EXAMPLE ONE****Grade 4 Module 2****Sparks Energy, Inc.**M2\_DQ1L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)**EXAMPLE TWO****Grade 4 Module 2****Sparks Energy, Inc.**M2\_DQ2L3 (TE, TB)L4 (TE, TB)**EXAMPLE THREE****Grade 4 Module 5****Super Survivors**M5\_DQ5L1 (TE, TB)L2 (TE, TB)L4 (TE, TB)L7 (TE, TB) |  |  |  |
| **DCI** | **PS3.B: Conservation of Energy and Energy Transfer*** Energy is present whenever there are moving objects, sound, light, or heat. When objects collide, energy can be transferred from one object to another, thereby changing their motion. In such collisions, some energy is typically also transferred to the surrounding air; as a result, the air gets heated and sound is produced. (4-PS3-2)
* Light also transfers energy from place to place. (4-PS3-2)
* Energy can also be transferred from place to place by electric currents, which can then be used locally to produce motion, sound, heat, or light. The currents may have been produced to begin with by transforming the energy of motion into electrical energy. (4-PS3-2)
 | **EXAMPLE ONE****Grade 4 Module 2****Sparks Energy, Inc.**M2\_DQ1L2 (TE, TB)L4 (TE, TB)L5 (TE, TB)L6 (TE, TB)**EXAMPLE TWO****Grade 4 Module 2****Sparks Energy, Inc.**M2\_DQ2L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)L6 (TE, TB)L7 (TE, TB)**EXAMPLE THREE****Grade 4 Module 5****Super Survivors**M5\_DQ5L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)L7 (TE, TB) |  |  |  |
| **CCC** | **Energy and Matter*** Energy can be transferred in various ways and between objects. (4-PS3-2)
 | **EXAMPLE ONE****Grade 4 Module 2****Sparks Energy, Inc.**M2\_DQ1L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)L5 (TE, TB)L6 (TE, TB)L7 (TE, TB)**EXAMPLE TWO****Grade 4 Module 2****Sparks Energy, Inc.**M2\_DQ2L2 (TE, TB)L3 (TE, TB)L6 (TE, TB)L8 (TE, TB)**EXAMPLE THREE****Grade 4 Module 5****Super Survivors**M5\_DQ5L1 (TE, TB)L4 (TE, TB)L7 (TE, TB)) |  |  |  |

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| **Science and Engineering Practices****Disciplinary Core Ideas****Crosscutting Concepts** | **Publisher Citations** | **Meets Standard** | **Reviewer Comments, Citations, and Questions** | **Performance Expectation** | **Publisher Citations** | **Meets Standard** | **Reviewer Comments, Citations, and Questions** |
| **Y** | **N** | **Y** | **N** |
| **SEP** | **Asking Questions and Defining Problems**Asking questions and defining problems in grades 3–5 builds on grades K–2 experiences and progresses to specifying qualitative relationships.* Ask questions that can be investigated and predict reasonable outcomes based on patterns such as cause and effect relationships. (4-PS3-3)
 | **EXAMPLE ONE****Grade 4 Module 1****Egg Racers**M1\_DQ3L1 (TE, TB)L3 (TE, TB)**EXAMPLE TWO****Grade 4 Module 1****Egg Racers**M1\_DQ4L2 (TE, TB) |  |  |  | **4-PS3-3.** **Ask questions and predict outcomes about the changes in energy that occur when objects collide.** [Clarification Statement: Emphasis is on the change in the energy due to the change in speed, not on the forces, as objects interact.] [Assessment Boundary: Assessment does not include quantitative measurements of energy.] | **EXAMPLES****Grade 4 Module 1****Egg Racers**M1\_DQ3L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)**Grade 4 Module 1****Golf Ball** Benchmark Assessment(TE 174-177)**Grade 4 Module 1****Egg Racers**M1\_DQ4L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)L5 (TE, TB)**Grade 4 Module 1****Leveled Reader: The Science of Baseball**Chapter 1 (LR 2-15) |  |  |  |
| **DCI** | **PS3.A: Definitions of Energy** * Energy can be moved from place to place by moving objects or through sound, light, or electric currents. (4-PS3-3)
 | **EXAMPLE ONE****Grade 4 Module 1****Egg Racers**M1\_DQ3L3 (TE, TB)**EXAMPLE TWO****Grade 4 Module 1****Egg Racers**M1\_DQ4L1 (TE, TB)L4 (TE, TB)L5 (TE, TB) |  |  |  |
| **DCI** | **PS3.B: Conservation of Energy and Energy Transfer*** Energy is present whenever there are moving objects, sound, light, or heat. When objects collide, energy can be transferred from one object to another, thereby changing their motion. In such collisions, some energy is typically also transferred to the surrounding air; as a result, the air gets heated and sound is produced. (4-PS3-3)
 | **EXAMPLE ONE****Grade 4 Module 1****Egg Racers**M1\_DQ3L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)**EXAMPLE TWO****Grade 4 Module 1****Benchmark Assessment: Motion and Energy in Golf Balls**(TE 174-177)**EXAMPLE THREE****Grade 4 Module 1****Leveled Reader: The Science of Baseball**Chapter 1 (LR 2-15) |  |  |  |
| **DCI** | **PS3.C: Relationship Between Energy and Forces*** When objects collide, the contact forces transfer energy so as to change the objects’ motions. (4-PS3-3)
 | **EXAMPLE ONE****Grade 4 Module 1****Egg Racers**M1\_DQ3L2 (TE, TB)L3 (TE, TB) (TE, TB)L4 (TE, TB)**EXAMPLE TWO****Grade 4 Module 1****Egg Racers**M1\_DQ4L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)L5 (TE, TB)**EXAMPLE THREE****Grade 4 Module 1****Leveled Reader: The Science of Baseball**Chapter 1 (LR 2-15) |  |  |  |
| **CCC** | **Energy and Matter*** Energy can be transferred in various ways and between objects. (4-PS3-3)
 | **EXAMPLE ONE****Grade 4 Module 1****Egg Racers**M1\_DQ3L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)**EXAMPLE TWO****Grade 4 Module 1****Benchmark Assessment: Motion and Energy in Golf Balls**(TE 174-177)**EXAMPLE THREE****Grade 4 Module 1****Egg Racers**M1\_DQ4L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)L5 (TE, TB) |  |  |  |

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| **Science and Engineering Practices****Disciplinary Core Ideas****Crosscutting Concepts** | **Publisher Citations** | **Meets Standard** | **Reviewer Comments, Citations, and Questions** | **Performance Expectation** | **Publisher Citations** | **Meets Standard** | **Reviewer Comments, Citations, and Questions** |
| **Y** | **N** | **Y** | **N** |
| **SEP** | **Constructing Explanations and Designing Solutions**Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems.* Apply scientific ideas to solve design problems. (4-PS3-4)
 | **EXAMPLE ONE****Grade 4 Module 2****Sparks Energy, Inc.**M2\_DQ1L5 (TE, TB)L6 (TE, TB)**EXAMPLE TWO****Grade 4 Module 2****Sparks Energy, Inc.**M2\_DQ2L6 (TE, TB)L7 (TE, TB)L8 (TE, TB) |  |  |  | **4-PS3-4.****Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.\*** [Clarification Statement: Examples of devices could include electric circuits that convert electrical energy into motion energy of a vehicle, light, or sound; and a passive solar heater that converts light into heat. Examples of constraints could include the materials, cost, or time to design the device.] [Assessment Boundary: Devices should be limited to those that convert motion energy to electric energy or use stored energy to cause motion or produce light or sound.] | **EXAMPLES****Grade 4 Module 2****Sparks Energy, Inc.**M2\_DQ1L5 (TE, TB)L6 (TE, TB)L7 (TE, TB)Key ResourcesL5-6 **Solar Cookers** interactive**Grade 4 Module 2****Sparks Energy, Inc.**M2\_DQ2L6 (TE, TB))L7 (TE, TB)L8 (TE, TB)Key ResourcesL6 **Building Wind Turbine** modelL7 **Improving Wind Turbine** modelL8 **Testing Wind Turbine** model**Grade 4 Module 2.****Leveled Reader: Renewable Energy**Chapter 3 (LR 22-29) |  |  |  |
| **DCI** | **PS3.B: Conservation of Energy and Energy Transfer*** Energy can also be transferred from place to place by electric currents, which can then be used locally to produce motion, sound, heat, or light. The currents may have been produced to begin with by transforming the energy of motion into electrical energy. (4-PS3-4)
 | **EXAMPLE ONE****Grade 4 Module 2****Sparks Energy, Inc.**M2\_DQ2L3 (TE, TB)L6 (TE, TB)L7 (TE, TB)L8 (TE, TB)L9 (TE, TB) |  |  |  |
| **DCI** | **PS3.D: Energy in Chemical Processes and Everyday Life*** The expression “produce energy” typically refers to the conversion of stored energy into a desired form for practical use. (4-PS3-4)
 | **EXAMPLE ONE****Grade 4 Module 2****Sparks Energy, Inc.**M2\_DQ2L3 (TE, TB)L6 (TE, TB)L7 (TE, TB)L8 (TE, TB))**EXAMPLE TWO****Grade 4 Module 2****Sparks Energy, Inc.**M2\_DQ3L1 (TE, TB) |  |  |  |
| **DCI** | **ETS1.A: Defining Engineering Problems*** Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account. (secondary to 4-PS3-4)
 | **EXAMPLE ONE****Grade 4 Module 2****Sparks Energy, Inc.**M2\_DQ1L5 (TE, TB)L6 (TE, TB)**EXAMPLE TWO****Grade 4 Module 2****Sparks Energy, Inc.**M2\_DQ2L7 (TE, TB)L8 (TE, TB) |  |  |  |
| **CCC** | **Energy and Matter*** Energy can be transferred in various ways and between objects. (4-PS3-4)
 | **EXAMPLE ONE****Grade 4 Module 2****Sparks Energy, Inc.**M2\_DQ1L5 (TE, TB)L6 (TE, TB)L7 (TE, TB)**EXAMPLE TWO****Grade 4 Module 2****Sparks Energy, Inc.**M2\_DQ2L6 (TE, TB)L8 (TE, TB) |  |  |  |
| **CCC** | ***Connections to Engineering, Technology,******and Applications of Science*****Influence of Engineering, Technology, and Science on Society and the Natural World*** Engineers improve existing technologies or develop new ones. (4-PS3-4)
 | **EXAMPLE ONE****Grade 4 Module 2****Sparks Energy, Inc.**M2\_DQ1L7 (TE, TB) |  |  |  |
| **CCC** | ***Connections to Nature of Science*****Science is a Human Endeavor** * Most scientists and engineers work in teams. (4-PS3-4)
* Science affects everyday life. (4-PS3-4)
 | **EXAMPLE ONE****Grade 4 Module 2****Sparks Energy, Inc.**M2\_DQ2L8 (TE, TB)**EXAMPLE TWO****Grade 4 Group Work Week**M0\_DQ1L1 (TE, TB)L2 (TE, TB)L5 (TE, TB)L7 (TE, TB) |  |  |  |

**4-PS4 Waves and their Applications in Technologies for Information Transfer**

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| **Science and Engineering Practices****Disciplinary Core Ideas****Crosscutting Concepts** | **Publisher Citations** | **Meets Standard** | **Reviewer Comments, Citations, and Questions** | **Performance Expectation** | **Publisher Citations** | **Meets Standard** | **Reviewer Comments, Citations, and Questions** |
| **Y** | **N** | **Y** | **N** |
| **SEP** | **Developing and Using Models**Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions. * Develop a model using an analogy, example, or abstract representation to describe a scientific principle. (4-PS4-1)
 | **EXAMPLE ONE****Grade 4 Module 4****Earthquake Engineering**M4\_DQ1L1 (TE, TB)L4 (TE, TB)L5 (TE, TB)Key ResourcesL4 **Making Waves** interactive**EXAMPLE TWO****Grade 4 Module 5****Super Survivors**M5\_DQ5L5 (TE, TB)L6 (TE, TB)L7 (TE, TB)Key ResourcesL6 **Waves Breakers** interactive |  |  |  | **4-PS4-1. Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move.** [Clarification Statement: Examples of models could include diagrams, analogies, and physical models using wire to illustrate wavelength and amplitude of waves.] [*Assessment Boundary: Assessment does not include interference effects, electromagnetic waves, non-periodic waves, or quantitative models of amplitude and wavelength.]* | **EXAMPLES****Grade 4 Module 4****Earthquake Engineering**M4\_DQ1L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)L5 (TE, TB)Key ResourcesL4 **Making Waves** interactiveL5 **How Big Was That Earthquake?** text**Grade 4 Module 5****Super Survivors**M5\_DQ5L5 (TE, TB)L6 (TE, TB)L7 (TE, TB)Key ResourcesL6 **Wave Breakers** interactive**Grade 4 Module 5****Super Survivors****Driving Question 6**M5\_DQ6L5 (TE, TB) |  |  |  |
| **SEP** | ***Connections to Nature of Science*****Scientific Knowledge is Based on Empirical Evidence*** Science findings are based on recognizing patterns. (4-PS4-1)
 | **EXAMPLE ONE****Grade 4 Module 4****Earthquake Engineering**M4\_DQ1L3 (TE, TB) |  |  |  |
| **DCI** | **PS4.A: Wave Properties** * Waves, which are regular patterns of motion, can be made in water by disturbing the surface. When waves move across the surface of deep water, the water goes up and down in place; there is no net motion in the direction of the wave except when the water meets the beach. (Note: This grade band endpoint was moved from K–2.) (4-PS4-1)
* Waves of the same type can differ in amplitude (height of the wave) and wavelength (spacing between wave peaks). (4-PS4-1)
 | **EXAMPLE ONE****Grade 4 Module 4****Earthquake Engineering**M4\_DQ1L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)L5 (TE, TB)Key Resources L4 **Making Waves** interactiveL5 **How Big Was That Earthquake?** text (TB)**EXAMPLE TWO****Grade 4 Module 5****Super Survivors**M5\_DQ5L5 (TE, TB)L6 (TE, TB)L7 (TE, TB)Key ResourcesL6 **Wave Breakers** interactive |  |  |  |
| **CCC** | **Patterns*** Similarities and differences in patterns can be used to sort, classify and analyze simple rates of change for natural phenomena. (4-PS4-1)
 | **EXAMPLE ONE****Grade 4 Module 4****Earthquake Engineering**M4\_DQ1L2 (TE, TB)L3 (TE, TB)**EXAMPLE TWO****Grade 4 Module 5****Super Survivors**M5\_DQ5L6 (TE, TB)L7 (TE, TB)**EXAMPLE THREE****Grade 4 Module 5****Super Survivors**M4\_DQ1L5 (TE, TB) |  |  |  |

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| **Science and Engineering Practices****Disciplinary Core Ideas****Crosscutting Concepts** | **Publisher Citations** | **Meets Standard** | **Reviewer Comments, Citations, and Questions** | **Performance Expectation** | **Publisher Citations** | **Meets Standard** | **Reviewer Comments, Citations, and Questions** |
| **Y** | **N** | **Y** | **N** |
| **SEP** | **Developing and Using Models**Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions. * Develop a model to describe phenomena. (4-PS4-2)
 | **EXAMPLE ONE****Grade 4 Module 5****Super Survivors**M5\_DQ3L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)**EXAMPLE TWO****Grade 4 Module 5****Super Survivors**M5\_DQ4L2 (TE, TB) |  |  |  | **4-PS4-2.****Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.** [*Assessment Boundary: Assessment does not include knowledge of specific colors reflected and seen, the cellular mechanisms of vision, or how the retina works*.] | **EXAMPLES****Grade 4 Module 5****Super Survivors**M5\_DQ3L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)L5 (TE, TB)Key ResourcesL5 **Light Entering the Eye** video**Grade 4 Module 5****Super Survivors**M5\_DQ4L2 (TE, TB))**Grade 4 Module 5****Super Survivors****Benchmark Assessment:**Light Reflections(TE 146-149) |  |  |  |
| **DCI** | **PS4.B: Electromagnetic Radiation** * An object can be seen when light reflected from its surface enters the eyes. (4-PS4-2)
 | **EXAMPLE ONE****Grade 4 Module 5****Super Survivors**M5\_DQ3L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)L5 (TE, TB)**EXAMPLE TWO****Grade 4 Module 5****Super Survivors**M5\_DQ4L2 (TE, TB) |  |  |  |
| **CCC** | **Cause and Effect**Cause and effect relationships are routinely identified. | **EXAMPLE ONE****Grade 4 Module 5****Super Survivors**M5\_DQ3L1 (TE, TB)L2 (TE, TB)L3 (TE, TB) L5 (TE, TB)  |  |  |  |

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| **Science and Engineering Practices****Disciplinary Core Ideas****Crosscutting Concepts** | **Publisher Citations** | **Meets Standard** | **Reviewer Comments, Citations, and Questions** | **Performance Expectation** | **Publisher Citations** | **Meets Standard** | **Reviewer Comments, Citations, and Questions** |
| **Y** | **N** | **Y** | **N** |
| **SEP** | **Constructing Explanations and Designing Solutions**Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems.* Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design solution. (4-PS4-3)
 | **EXAMPLE ONE****Grade 4 Module 5****Super Survivors**M5\_DQ6L1 (TE, TB)L2 (TE, TB)L3 (TE, TB))L4 (TE, TB) |  |  |  | **4-PS4-3.****Generate and compare multiple solutions that use patterns to transfer information.\*** [Clarification Statement: Examples of solutions could include drums sending coded information through sound waves, using a grid of 1’s and 0’s representing black and white to send information about a picture, and using Morse code to send text.] | **EXAMPLES****Grade 4 Module 5****Super Survivors**M5\_DQ6L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)L5 (TE, TB)L6 (TE, TB)L7 (TE, TB)L9 (TE, TB)L10 (TE, TB)Key ResourcesL7 **Scoreboard Stunts** video |  |  |  |
| **DCI** | **PS4.C: Information Technologies and Instrumentation*** Digitized information can be transmitted over long distances without significant degradation. High-tech devices, such as computers or cell phones, can receive and decode information—convert it from digitized form to voice—and vice versa. (4-PS4-3)
 | **EXAMPLE ONE****Grade 4 Module 5****Super Survivors**M5\_DQ6L5 (TE, TB)L6 (TE, TB)L7 (TE, TB))L8 (TE, TB)L9 (TE, TB)L10 (TE, TB)Key ResourcesL7 **Scoreboard Stunts** video |  |  |  |
| **DCI** | **ETS1.C: Optimizing the Design Solution**Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints. (secondary to 4-PS4-3) | **EXAMPLE ONE****Grade 4 Module 5****Super Survivors**M5\_DQ6L4 (TE, TB)L9 (TE, TB))L10 (TE, TB) |  |  |  |
| **CCC** | **Patterns*** Similarities and differences in patterns can be used to sort and classify designed products. (4-PS4-3)
 | **EXAMPLE ONE****Grade 4 Module 5****Super Survivors**M5\_DQ6L5 (TE, TB)L6 (TE, TB)L7 (TE, TB)L8 (TE, TB)Key ResourcesL7 **Scoreboard Stunts** video |  |  |  |
| **CCC** | ***Connections to Engineering, Technology,******and Applications of Science*****Interdependence of Science, Engineering, and Technology*** Knowledge of relevant scientific concepts and research findings is important in engineering. (4-PS4-3)
 | **EXAMPLE ONE****Grade 4 Module 5****Super Survivors**M5\_DQ6L5 (TE, TB) |  |  |  |

**3–5-ETS1 Engineering Design**

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| **Science and Engineering Practices****Disciplinary Core Ideas****Crosscutting Concepts** | **Publisher Citations** | **Meets Standard** | **Reviewer Comments, Citations, and Questions** | **Performance Expectation** | **Publisher Citations** | **Meets Standard** | **Reviewer Comments, Citations, and Questions** |
| **Y** | **N** | **Y** | **N** |
| **SEP** | **Asking Questions and Defining Problems** Asking questions and defining problems in 3–5 builds on grades K–2 experiences and progresses to specifying qualitative relationships.* Define a simple design problem that can be solved through the development of an object, tool, process, or system and includes several criteria for success and constraints on materials, time, or cost. (3–5-ETS1-1)
 | **EXAMPLE ONE****Grade 4 Module 4****Earthquake Engineering**M4\_DQ1L1 (TE, TB)**EXAMPLE TWO****Grade 4 Module 4****Earthquake Engineering**M4\_DQ3L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)Key ResourcesL1 **Building Loads** video**EXAMPLE THREE****Grade 4 Module 4****Earthquake Engineering**M4\_DQ4L1 (TE, TB)L2 (TE, TB)**EXAMPLE FOUR****Grade 4 Module 4****Earthquake Engineering**M4\_DQ6L1 (TE, TB)L2 (TE, TB)L3 (TE, TB) |  |  |  | **3–5-ETS1-1.****Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.**  | **EXAMPLES****Grade 4 Module 2****Sparks Energy, Inc.**M2\_DQ1L5 (TE, TB)L6 (TE, TB)Key ResourcesL5-6 **Solar Cookers** interactive**Grade 4 Module 4****Earthquake Engineering**M4\_DQ1L1 (TE, TB)**Grade 4 Module 4****Earthquake Engineering**M4\_DQ3L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)Key ResourcesL1 **Building Loads** video**Grade 4 Module 4****Earthquake Engineering**M4\_DQ4L1 (TE, TB)L2 (TE, TB)**Grade 4 Module 4****Earthquake Engineering**M4\_DQ6L1 (TE, TB)L2 (TE, TB)L3 (TE, TB) |  |  |  |
| **DCI** | **ETS1.A: Defining and Delimiting Engineering Problems*** Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account. (3–5-ETS1-1)
 | **EXAMPLE ONE****Grade 4 Module 2****Sparks Energy, Inc.**M2\_DQ1L5 (TE 40-46, TB 15)L6 (TE 48-55, TB 16-17)Key ResourcesL5-6 **Solar Cookers** interactive**EXAMPLE TWO****Grade 4 Module 4****Earthquake Engineering**M4\_DQ1L1 (TE, TB))**EXAMPLE THREE****Grade 4 Module 4****Earthquake Engineering**M4\_DQ4L1 (TE, TB)L2 (TE, TB)**EXAMPLE FOUR****Grade 4 Module 4****Earthquake Engineering**M4\_DQ6L1 (TE, TB)L2 (TE, TB) |  |  |  |
| **CCC** | **Influence of Engineering, Technology, and Science on Society and the Natural World*** People’s needs and wants change over time, as do their demands for new and improved technologies. (3–5-ETS1-1)
 | **EXAMPLE ONE****Grade 4 Module 4****Earthquake Engineering**M4\_DQ1L1 (TE, TB)**EXAMPLE TWO****Grade 4 Module 4****Earthquake Engineering**M4\_DQ2L4 (TE, TB)L5 (TE, TB)**EXAMPLE THREE****Grade 4 Module 4****Earthquake Engineering**M4\_DQ5L2 (TE, TB)L3 (TE, TB)**EXAMPLE FOUR****Grade 4 Module 4****Earthquake Engineering**M4\_DQ6L4 (TE, TB)L5 (TE, TB) |  |  |  |

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| **Science and Engineering Practices****Disciplinary Core Ideas****Crosscutting Concepts** | **Publisher Citations** | **Meets Standard** | **Reviewer Comments, Citations, and Questions** | **Performance Expectation** | **Publisher Citations** | **Meets Standard** | **Reviewer Comments, Citations, and Questions** |
| **Y** | **N** | **Y** | **N** |
| **SEP** | **Constructing Explanations and Designing Solutions** Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems.* Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design problem. (3–5-ETS1-2)
 | **EXAMPLE ONE****Grade 4 Module 4****Earthquake Engineering**M4\_DQ3L3 (TE, TB)**EXAMPLE TWO****Grade 4 Module 4****Earthquake Engineering**M4\_DQ4L1 (TE, TB)L2 (TE, TB)**EXAMPLE THREE****Grade 4 Module 4****Earthquake Engineering**M4\_DQ6L3 (TE, TB)**EXAMPLE FOUR****Grade 4 Module 2****Sparks Energy, Inc.**M2\_DQ2L3 (TE, TB)L4 (TE, TB) |  |  |  | **3–5-ETS1-2.****Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.** | **EXAMPLES****Grade 4 Module 4****Earthquake Engineering**M4\_DQ3L3 (TE, TB))**Grade 4 Module 4****Earthquake Engineering**M4\_DQ4L1 (TE, TB)L2 (TE, TB)**Grade 4 Module 4****Earthquake Engineering**M4\_DQ6L1 (TE, TB))L2 (TE, TB))L3 (TE, TB)**Grade 4 Module 5****Super Survivors**M5\_DQ6L1 (TE, TB))**Grade 4 Module 3****Time-Traveling Tour Guide**M3\_DQ4L4 (TE, TB))L6 (TE, TB)**Grade 4 Module 2****Sparks Energy, Inc.**M2\_DQ2L3 (TE, TB)L4 (TE, TB)**Grade 4 Module 3****Leveled Reader: Sculpting Landscapes**Chapter 3 (LR 22-30) |  |  |  |
| **DCI** | **ETS1.B: Developing Possible Solutions*** Research on a problem should be carried out before beginning to design a solution. Testing a solution involves investigating how well it performs under a range of likely conditions. (3–5-ETS1-2)
* At whatever stage, communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs. (3–5-ETS1-2)
 | **EXAMPLE ONE****Grade 4 Module 5****Super Survivors**M5\_DQ6L1 (TE, TB) **EXAMPLE TWO****Grade 4 Module 4****Earthquake Engineering**M4\_DQ3L3 (TE, TB) **EXAMPLE THREE****Grade 4 Module 4****Earthquake Engineering**M4\_DQ4L1 (TE, TB)L2 (TE, TB)**EXAMPLE FOUR****Grade 4 Module 4****Earthquake Engineering**M4\_DQ6L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)**EXAMPLE FIVE****Grade 4 Module 3****Time-Traveling Tour Guide**M3\_DQ4L4 (TE, TB)L6 (TE, TB) |  |  |  |
| **CCC** | **Influence of Engineering, Technology, and Science on Society and the Natural World*** Engineers improve existing technologies or develop new ones to increase their benefits, decrease known risks, and meet societal demands. (3–5-ETS-2)
 | **EXAMPLE ONE****Grade 4 Module 3****Time-Traveling Tour Guide**M3\_DQ4L4 (TE, TB)L6 (TE, TB)**EXAMPLE TWO****Grade 4 Module 4****Earthquake Engineering**M4\_DQ6L4 (TE, TB)L5 (TE, TB) |  |  |  |

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| **Science and Engineering Practices****Disciplinary Core Ideas****Crosscutting Concepts** | **Publisher Citations** | **Meets Standard** | **Reviewer Comments, Citations, and Questions** | **Performance Expectation** | **Publisher Citations** | **Meets Standard** | **Reviewer Comments, Citations, and Questions** |
| **Y** | **N** | **Y** | **N** |
| **SEP** | **Planning and Carrying Out Investigations** Planning and carrying out investigations to answer questions or test solutions to problems in 3–5 builds on K–2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions. * Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered. (3–5-ETS1-3)
 | **EXAMPLE ONE****Grade 4 Module 5****Super Survivors**M5\_DQ6L2 (TE, TB)L4 (TE, TB)L8 (TE, TB)L9 (TE, TB))**EXAMPLE TWO****Grade 4 Module 4****Earthquake Engineering**M4\_DQ3L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)**EXAMPLE THREE****Grade 4 Module 4****Earthquake Engineering**M4\_DQ6L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)) |  |  |  | **3–5-ETS1-3.****Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.** | **EXAMPLES****Grade 4 Module 4****Earthquake Engineering**M4\_DQ3L1 (TE, TB))L3 (TE, TB)**Grade 4 Module 4****Earthquake Engineering**M4\_DQ4L2 (TE, TB)**Grade 4 Module 4****Earthquake Engineering**M4\_DQ6L1 (TE, TB) L2 (TE, TB) L3 (TE, TB)**Grade 4 Module 5****Super Survivors**M5\_DQ6L2 (TE, TB)L4 (TE, TB)L8 (TE, TB)L9 (TE, TB)L10 (TE, TB)**Grade 4 Module 3****Time-Traveling Tour Guide**M3\_DQ4L6 (TE, TB)**Grade 4 Module 1****Egg Racers**M1\_DQ4L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)L5 (TE, TB) |  |  |  |
| **DCI** | **ETS1.B: Developing Possible Solutions*** Tests are often designed to identify failure points or difficulties, which suggest the elements of the design that need to be improved. (3–5-ETS1-3)
 | **EXAMPLE ONE****Grade 4 Module 1****Egg Racers**M1\_DQ4L2 (TE, TB)L3 (TE, TB)L4 (TE, TB)L5 (TE, TB)**EXAMPLE TWO****Grade 4 Module 4****Earthquake Engineering**M4\_DQ3L2 (TE, TB)L3 (TE, TB)**EXAMPLE THREE****Grade 4 Module 4****Earthquake Engineering**M4\_DQ4L1 (TE, TB)L2 (TE, TB)L3 (TE, TB)**EXAMPLE FOUR****Grade 4 Module 4****Earthquake Engineering**M4\_DQ6L1 (TE, TB)L2 (TE, TB) L3 (TE, TB) **EXAMPLE FIVE****Grade 4 Module 3****Time-Traveling Tour Guide**M3\_DQ4L6 (TE 156-163, TB 61-66) |  |  |  |
| **DCI** | **ETS1.C: Optimizing the Design Solution*** Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints. (3–5-ETS1-3)
 | **EXAMPLE ONE****Grade 4 Module 4****Earthquake Engineering**M4\_DQ6L3 (TE, TB)**EXAMPLE TWO****Grade 4 Module 5****Super Survivors**M5\_DQ6L4 (TE, TB)L9 (TE, TB))L10 (TE, TB)**EXAMPLE THREE****Grade 4 Module 3****Time-Traveling Tour Guide**M3\_DQ4L6 (TE, TB)) |  |  |  |