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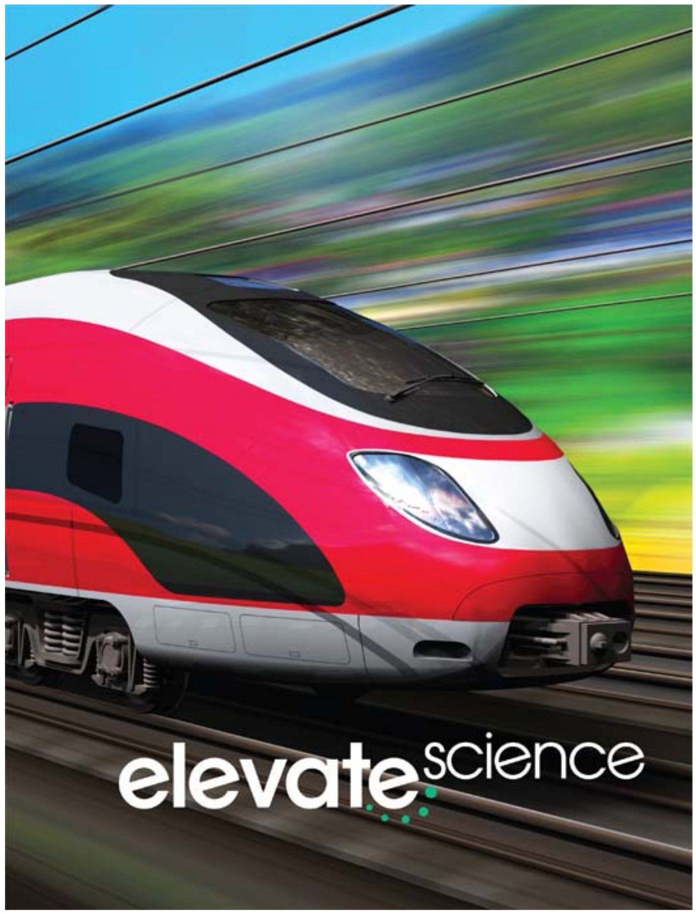

To the

Arkansas K-4 Science Standards
Topic Arrangement

Grade 4

Pearson

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Introduction

The following document demonstrates how the ***Elevate Science, ©2019*** program supports the Arkansas K-4 Science Standards, Grade 4. For each standard, correlation references are to the Student Edition and Teacher Edition where applicable.

Elevate Science is a comprehensive K-5 science program that focuses on active, student-centered learning. It builds students' critical thinking, questioning, and collaboration skills, and fuels interest in STEM and creative problem solving while supporting literacy development for elementary-age learners. Developed to support Arkansas K-4 Science Standards (NGSS), ***Elevate Science*** integrates three dimensional learning of the Scientific and Engineering Practices, Crosscutting Concepts (CCC), and Disciplinary Core Ideas (DCIs).

The ***Elevate Science*** blended print and digital curriculum engages students in phenomena-based inquiry and hands-on investigations.

- Problem–based learning Quests put students on a journey of discovery
- Engineering-focused features infuse STEM learning
- Coding and innovation engage students and build 21st century skills

The Teacher's Edition of ***Elevate Science*** helps elementary educators teach science with confidence: Scaffolding, ELD, differentiated instruction, and an instructional organization based upon the 5E learning model, (Engage, Explore, Explain, Extend/Elaborate, Evaluate), provide all the support needed for successful teaching practices. Professional development offers point-of-use support. A full-view approach to inquiry and testing provides new options for a variety of hands-on labs and assessments for three-dimensional learning.

Elevate Science 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 argument. 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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4. Energy	
Performance Expectation 4-PS3-1	
Use evidence to construct an explanation relating the speed of an object to the energy of that object. **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	**SE/TE:** 2–3, 4, 7, 12, 13, 17, 35, 46–47, 48–49, **TE Only:** 1d, 6a
Disciplinary Core Ideas	
PS3.A: Definitions of Energy The faster a given object is moving, the more energy it possesses.	**SE/TE:** 7, 13, **TE Only:** 6
Science and Engineering Practices	
Constructing Explanations and Designing Solutions Use evidence (e.g., measurements, observations, patterns) to construct and explanation.	**SE/TE:** 7, 20, 48–49, 65, 117, 123, 135, 154, 159, 185, 192, 206, 227, 232–233, 240–241, 246, 249, 259, 266–267, 274–275, 280, 364–365, **TE Only:** 6a, EM6-EM7, EM10-EM11
Crosscutting Concepts	
Energy and Matter Energy can be transferred in various ways and between objects.	**SE/TE:** 2–3, 5, 8, 16, 17, 18–19, 20–21, 22–23, 30, 32, 42, 48–49, **TE Only:** 6a

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Performance Expectation 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.	**SE/TE:** 17, 18–19, 20–21, 30, 32, 35, 42, **TE Only:** 1d, 16a, 24a, 34a
Disciplinary Core Ideas	
Energy can be moved from place to place by moving objects or through sound, light, or electric currents.	**SE/TE:** 8, 10-11, 16, 17,18–19, 20–21, 30, 29, 30, 32, 35, 37, 42, 48–49, **TE Only:** 16a, 24a, 34a
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.	**SE/TE:** 2–3, 5, 9, 16, 17, 18–19, 20–21, 22–23, 29, 32, 42, 46–47, 77, **TE Only:** 16a, 24a, 34a
Light also transfers energy from place to place.	**SE/TE:** 29
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.	**SE/TE:** 10–11, 30, 35, 37, 39, 48–49
Science and Engineering Practices	
Planning and Carrying Out Investigations Make observations and/or measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon or test a design solution.	**SE/TE:** 4, 17, 25, 35, EM7, **TE Only:** 16a, 24a, 34a, 384-385, EM12-EM13

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Crosscutting Concepts	
Energy and Matter Energy can be transferred in various ways and between objects.	**SE/TE:** 2–3, 5, 8, 16, 17, 18–19, 20–21, 22–23, 30, 32, 42, 48–49, **TE Only:** 16a, 24a, 34a
Performance Expectation 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.	**SE/TE:** 17, 18. 20–21, **TE Only:** 1d, 16a, 24a
Disciplinary Core Ideas	
PS3.A: Definitions of Energy Energy can be moved from place to place by moving objects or through sound, light, or electric energy.	**SE/TE:** 2–3, 5, 16, 17, 18–19, 20–21, 22–23, 32, 42, **TE Only:** 16a, 24a
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.	**SE/TE:** 2–3, 5, 16, 17, 18–19, 20–21, 22–23, 32, 42, **TE Only:** 16a, 24a
PS3.C Relationship Between Energy and Forces When objects collide, the contact forces transfer energy so as to change the objects' motions.	**SE/TE:** 2–3, 5, 16, 17, 18–19, 20–21, 22–23, 32, 42, **TE Only:** 24a

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Science and Engineering Practices	
Asking Questions and Defining Problem Ask questions that can be investigated and predict reasonable outcomes based on patterns such as cause and effect relationships.	**SE/TE:** 72–73, 109, 372, **TE Only:** 384-385, EM10-EM11
Crosscutting Concepts	
Energy and Matter Energy can be transferred in various ways and between objects.	**SE/TE:** 2–3, 5, 8, 16, 17, 18–19, 20–21, 22–23, 30, 32, 42, 48–49, **TE Only:** 16a, 24a
Performance Expectation 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 of energy of a vehicle, light, or sound; and, a passive solar heater that converts light into heat. Examples of constraints could include the materials, costs, 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 of produce light or sound.	**SE/TE:** 40–41, 57, 75, 80, **TE Only:** 50d, 56a, 64a, 74a
Disciplinary Core Ideas	
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.	**SE/TE:** 72–73

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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.	**TE Only:** 56a, 64a, 74a
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 solution 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.	**SE/TE:** EM10, EM11
Science and Engineering Practices	
Constructing Explanations and Designing Solutions Apply scientific ideas to solve design problems.	**SE/TE:** 4, 6, 40–41, 43, 52–53, 70, 72–73, 82–83, 92, 93, 139, 240–241, EM10, **TE Only:** 56a, 64a, EM6-EM7, EM10-EM11
Crosscutting Concepts	
Energy and Matter Energy can be transferred in various ways and between objects.	**SE/TE:** 2–3, 5, 8, 16, 17, 18–19, 20–21, 22–23, 30, 32, 42, 48–49, **TE Only:** 56a, 64a, 74a
Influence of Engineering, Technology, and Applications of Science Engineers improved existing technologies or develop new ones.	**SE/TE:** 4, 6, 20, 40–41, 43, 48–49, 52–53, 82–83, 84, 92, 93
Science is a Human Endeavor Most scientists and engineers work in teams. Science affects everyday life.	**SE/TE:** 4, 40–41, 48–49, 74, 82–83, 92, 184, 258, 260

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Performance Expectation 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.	**SE/TE:** 54, 90, 98–99, **TE Only:** 50d, 56a, 64a, 74a, 84a
Disciplinary Core Ideas	
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.	**SE/TE:** 54, 58, 68-69, 77, 78, 90, 94–95, 96–97,196–197, **TE Only:** 56a, 64a, 74a, 84a
Science and Engineering Practices	
Obtaining, Evaluating, and Communicating Information Obtain and combine information from books and other reliable media to explain phenomena.	**SE/TE:** 66, **TE Only:** 84a, EM8-EM9, EM10-EM11
Crosscutting Concepts	
Cause and Effect Cause and effect relationships are routinely identified and used to explain change. **Interdependence of Science, Engineering, and Technology** Knowledge of relevant scientific concepts and research findings is important in engineering.	**SE/TE:** 5, 8, 38, 39, 44, 48–49, 84, 229, 236, 237, 239, **TE Only:** 56a, 64a, 74a, 84a

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4. Waves: Waves and Information	
Performance Expectation 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.	**SE/TE:** 107, 117, 120–121, 135, 148–149, **TE Only:** 100d, 106a, 116a
Disciplinary Core Ideas	
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 waves except when the water meets a beach.	**SE/TE:** 104, 107, 117, 118, 119, 120–121, 122, **TE Only:** 106a, 116a
Waves of the same type can differ in amplitude (height of the wave) and wavelength (spacing between wave peaks).	**SE/TE:** 109, 110–111, 112, 118, 120–121, **TE Only:** 106a, 116a
Science and Engineering Practices	
Developing and Using Models Develop a model suing an analogy, example, or abstract presentation to describe a scientific principle. **Scientific Knowledge is Based on Empirical Evidence** Science Findings are based on recognizing patterns.	**SE/TE:** 20, 104, 125, 135, 139, 148–149, 164–165, 167, 240–241, 256–257, 341, 351, 359, EM6, **TE Only:** 106a, 116a, EM6-EM7, EM12-EM13
Crosscutting Concepts	
Patterns Similarities and differences in patterns can be used to sort, classify, and analyze simple rates of change for natural phenomena.	**SE/TE:** 117, 19, 120–121, 122, 175, 180, 200–201, **TE Only:** 106a, 116a

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Performance Expectation 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.	**TE Only:** 100d, 116a, 124a, 134a
Disciplinary Core Ideas	
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.	**SE/TE:** 82–83, 137, 144–145, EM3, **TE Only:** 134a
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.	**SE/TE:** 57, EM11, EM13
Science and Engineering Practices	
Constructing Explanations and Designing Solutions Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design solution.	**SE/TE:** 40–41, **TE Only:** 116a, 124a, 134a, EM6-EM7, EM10-EM11
Crosscutting Concepts	
Patterns Similarities and differences in patterns can be used to sort and classify designed products.	**SE/TE:** 246, 249, 259, 266–267, 274–275, **TE Only:** 116a, 134a
Interdependence of Science, Engineering, and Technology Knowledge of relevant scientific concepts and research findings is important in engineering.	**SE/TE:** 40–41, 43, 184

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4. Structure, Function, and Information Processing	
Performance Expectation 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.	**SE/TE:** 125, **TE Only:** 100d, 124a
Disciplinary Core Ideas	
PS4.B: Electromagnetic Radiation An object can be seen when lighted reflected from its surface enters the eye.	**SE/TE:** 127, 131, 144–145, **TE Only:** 124a
Science and Engineering Practices	
Developing and Using Models Develop a model to describe phenomena.	**SE/TE:** 104, 107, 125, 148–149, 167, 209, 210, 219, 309, 317, 341, 359, **TE Only:** 124a, EM6-EM7, EM12-EM13
Crosscutting Concepts	
Cause and Effect Cause and effect relationships are routinely identified.	**SE/TE:** 5, 8, 38, 39, 44, 48–49, 84, 229, 236, 237, 239, **TE Only:** 124a

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Performance Expectation 4-LS1-1	
Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction. **AR Clarification Statement:** Examples of structures for survival could include thorns and teeth. Examples of structures for growth could include stems and the skeleton. Examples of structures for behavior could include roots and the brain. Examples of reproduction could include pistils, stamens, and eggs. **AR Assessment Boundary:** Assessment is limited to macroscopic structures within plant and animal systems.]	**SE/TE:** 280, 290–291, 301, 315, 330–331, 351, 367, 382–383, **TE Only:** 276d, 282a, 292a, 300a, 308a, 334d, 340a, 350a, 358a, 366a
Disciplinary Core Ideas	
LS1.A: Structure and Function Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction.	**SE/TE:** 276–277, 278–279, 280, 282, 283, 284, 285, 288, 289, 290–291, 293, 294, 295, 296–297, 298, 301, 302, 303, 307, 308, 309, 310–311, 312, 313, 314, 315, 326, 328–329, 330–331, 332–333, 336–337, 341, 351, 367, 382–383, **TE Only:** 282a, 292a, 300a, 308a, 340a, 350a, 358a, 366a
Science and Engineering Practices	
Engaging in Argument from Evidence Construct an argument with evidence, data, and/or a model.	**SE/TE:** 80, 290–291, 341, 282–283, 293, 301, 351, 367, EM7, **TE Only:** 282a, 292a, 300a, 340a, 350a, 366a, EM6-EM7, EM12-EM13
Crosscutting Concepts	
Systems and System Models A system can be described in terms of its components and their interactions.	**SE/TE:** 35, 342–346, 352–356, 358, 360–363, 381–382, **TE Only:** 282a, 292a, 300a, 308a, 340a, 350a, 358a, 366a

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Performance Expectation 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. **AR Clarification Statement:** Emphasis is on systems of information transfer. Use of models could include diagrams, computer simulations, and physical models. **AR Assessment Boundary**: Assessment does not include the mechanisms by which the brain stores and recalls information or the mechanisms of how sensory receptors function.	**SE/TE:** 317, 332–333, 336–337, 359, 364–365, **TE Only:** 276d, 316a, 334d, 358a
Disciplinary Core Ideas	
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.	**SE/TE:** 316, 317, 318–319, 320, 322, 323, 330–331, 336–337, 359, 360–361, 364–365, **TE Only:** 358a
Science and Engineering Practices	
Developing and Using Models Use a model to test interactions concerning the functioning of a natural system.	**SE/TE:** 20, 148–149, 341, **TE Only:** 316a, 358a, EM6-EM7, EM12-EM13
Crosscutting Concepts	
Systems and System Models A system can be described in terms of its components and their interactions.	**SE/TE:** 35, 342–346, 352–356, 358, 360–363, 381–382, **TE Only:** 316a

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4. Earth's Systems: Processes that Shape the Earth	
Performance Expectation 4-ESS1-1	
Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time. **Clarification Statement** Examples of evidence from patterns could include rock layer with marine 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 frock formation and layers. Assessment is limited to relative time.	**SE/TE:** 244–245, 249, 251, 255, 258, 259, 260, 261, 262–263, 264, 268, 270–271, 272–273, 274–275, **TE Only:** 242d, 248a, 258a
Disciplinary Core Ideas	
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.	**SE/TE:** 244–245, 248, 249, 250, 251, 252, 253, 254, 255, 259, 260, 261, 264, 265, 266–267, 268, 270–271, 272–273, 274–275, **TE Only:** 248a, 258a
Science and Engineering Practices	
Constructing Explanations and Designing Solutions Identify the evidence that supports particular points in an explanation.	**SE/TE:** 7, 17, 35, **TE Only:** 248a, 258a, EM6-EM7, EM10-EM11

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Crosscutting Concepts	
Patterns Patterns can be used as evidence to support and explanation. **Scientific Knowledge Assumes an Order and Consistency in Natural Systems** Science assumes consistent patterns in natural systems.	**SE/TE:** 246, 249, 259, 266–267, 274–275, **TE Only:** 248a, 258a
Performance Expectation 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.	**SE/TE:** 152–153, 154, 177, 185, 186, 192, 194, **TE Only:** 150d, 174aE, 184a
Disciplinary Core Ideas	
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.	**SE/TE:** 154, 182–183, 185, 186, 187, 188, 189, 191, 193, 194, 196–197, 198–199, **TE Only:** 174a, 184a
ESS2.E Biologeology Living things affect the physical characteristics of their regions.	**SE/TE:** 186, 193
Science and Engineering Practices	
Planning and Carrying Out Investigations Make observations to produce data to serve as the basis for evidence for an explanation of a phenomenon.	**SE/TE:** 154, 175, 177, 185, 200–201, 182–183, 192, EM5, **TE Only:** 174a, 184a, 384-385, EM12-EM13

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Crosscutting Concepts	
Cause and Effect Cause and effect relationships are routinely identified, tested, and used to explain change.	**SE/TE:** 5, 8, 38, 39, 44, 48–49, 84, 229, 236, 237, 239, **TE Only:** 174a, 184a
Performance Expectation 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.	**SE/TE:** 152–153, 157, 162, 164–165, 169, **TE Only:** 150d, 156a, 166a
Disciplinary Core Ideas	
ESS2.B: Plate Tectonic 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.	**SE/TE:** 156, 158, 159, 160–161, 162, 163, 164–165, 168, 169, 170–171, 172, 173, 196–197, 225, **TE Only:** 156a, 166a
Science and Engineering Practices	
Analyzing and Interpreting Data Analyze and Interpret data to make sense of phenomena using logical reasoning.	**SE/TE:** 157, 249, 259, 266–267, 274–275,275, 280, 282–283, 323–333, 359, **TE Only:** 156a, 166A, 384-385, EM2-EM3, EM4-EM5
Crosscutting Concepts	
Patterns Patterns can be used as evidence to support and explanation.	**SE/TE:** 246, 249, 259, 266–267, 274–275, **TE Only:** 156a, 166a

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Performance Expectation 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.	**SE/TE:** 206, 227, 228, 232–233, 240–241, **TE Only:** 202d, 208a, 218a, 226a
Disciplinary Core Ideas	
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. **ETS1.B Designing Solutions to Engineering Problems** Testing a solution involves investigating how well it performs under a range of likely conditions.	**SE/TE:** 204–205, 206, 208, 209, 210, 211, 212–213, 214, 215, 216–217, 226, 227, 228, 229, 231, 232–233, 234, 236–237, 238–239, 240–241, **TE Only:** 208a, 218a, 226a
Science and Engineering Practices	
Constructing Explanations and Designing Solutions Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design solution.	**SE/TE:** 204–205, 206, 232–233, 240–241, **TE Only:** 208a, 218a, 226a, EM6-EM7, EM10-EM11
Crosscutting Concepts	
Cause and Effect Cause and effect relationships are routinely identified, tested, and used to explain change.	**SE/TE:** 5, 8, 38, 39, 44, 48–49, 84, 229, 236, 237, 239, **TE Only:** 208a, 218a, 226a

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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.	**SE/TE:** 4, 6, 20, 40–41, 43, 48–49, 52–53, 82–83, 84, 92, 93
3-5. Engineering Design	
Performance Expectation 4-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.	**SE/TE:** 14–15, 114–115, 164–165, 324–325 **TE Only:** 14-15, 74a, 82-83, 114-115, 164-165, 324-325
Disciplinary Core Ideas	
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.	**SE/TE:** 232–233, 240–241, EM10, EM11
Science and Engineering Practices	
Asking Questions and Defining Problems 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.	**SE/TE:** 14–15, 114–115, 164–165, 324–325, EM10 **TE Only:** 384-385, EM10-EM11
Crosscutting Concepts	
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.	**SE/TE:** 82-83, 92, 324-325, 376

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Performance Expectation 4-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.	**SE/TE:** 206, 232–233, 240–241 **TE Only:** 226a
Disciplinary Core Ideas	
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 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.	**SE/TE:** 127, EM11
Science and Engineering Practices	
Constructing Explanations and Designing Solutions Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design problem.	**SE/TE:** 204–205, 206, 232–233, 240–241 **TE Only:** EM6-EM7, EM10-EM11
Crosscutting Concepts	
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.	**SE/TE:** 4, 6, 20, 40–41, 43, 48–49, 52–53, 82–83, 84, 92, 93

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Arkansas K-4 Science Standards, Topic Arrangement

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Performance Expectation 4-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.	**SE/TE:** 240–241, 348–349 **TE Only:** 348-349
Disciplinary Core Ideas	
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.	**SE/TE:** 240–241
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.	**SE/TE:** 240–241
Science and Engineering Practices	
Planning and Carrying Out Investigations 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.	**SE/TE:** 185 **TE Only:** 384-385, EM12-EM13