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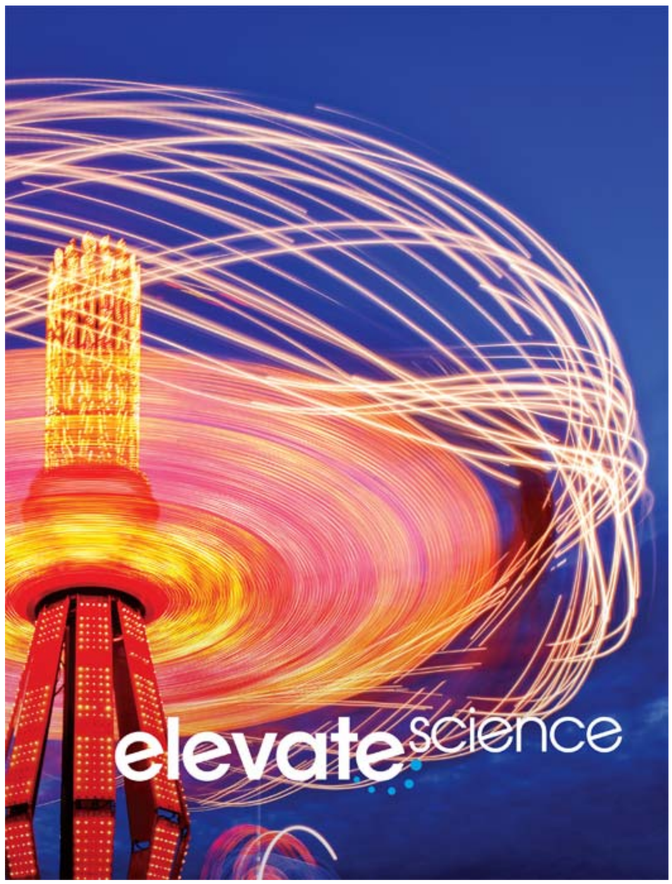

To the

Arkansas K-4 Science Standards
Topic Arrangement

Grade 3

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Introduction

The following document demonstrates how the ***Elevate Science, ©2019*** program supports the Arkansas K-4 Science Standards, Grade 3. 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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3. Forces and Interactions	
Performance Expectation 3-PS2-1	
Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object. **AR Clarification Statement:** Examples could include an unbalanced force on one side of a box can make it start moving or balanced forces pushing on a box from both sides will not produce any motion at all. **AR Assessment Boundary:** Assessment is limited to one variable at a time: number, size, or direction of forces. Assessment does not include quantitative force size, only qualitative and relative. Assessment is limited to gravity being addressed as a force that pulls objects down.	**SE/TE:** 2–3, 4, 31, 35, 39, 40–41, 57, 67 **TE only:** 1d, 24a, 34a
Disciplinary Core Ideas	
PS2.A: Forces and Motion Each force acts on one particular object and has both strength and a direction. An object at rest typically has multiple forces acting on it, but they add to give zero net force on the object. Forces that do not sum to zero can cause changes in the object's speed or direction of motion.	**SE/TE:** 12, 25, 30, 38
PS2.B: Types of Interactions Objects in contact exert forces on each other.	**SE/TE:** 27 **TE only:** 6a, 24a, 34a

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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. **Scientific Investigations Use a Variety of Methods** •Science investigations use a variety of methods, tools, and techniques.	**SE/TE:** 4, 91 **TE only:** 6a, 24a, 34a, 294-295, EM12-EM13
Crosscutting Concepts	
Cause and Effect Cause and Effect relationships are routinely identified.	**TE only:** 6a, 24a, 34a
Performance Expectation 3-PS2-2	
Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion. **Clarification Statement** Examples of motion with a predictable pattern could include a child swinging in a swing, a ball rolling back and forth in a bowl, and two children on a see-saw. **Assessment Boundary** Assessment does not include technical terms such as period and frequency.	**SE/TE:** 4, 7, 17, 18, 20–21 **TE only:** 1d, 16a, 24a
Disciplinary Core Ideas	
PS2.A: Forces and Motion The patterns of an object's motion in various situations can be observed and measured; when that past motion exhibits a regular pattern, future motion can be predicted from it.	**SE/TE:** 8, 10–11, 17, 18, 20-21, 24, 25, 26, 32, 48–49 **TE only:** 16a

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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:** 40–41, 48–49, 91, 111, 116–117, EMS5, EMS7 **TE only:** 16a, 294-295, EM12-EM13
Science Knowledge is Based on Empirical Evidence Science findings are based on recognizing patterns.	**SE/TE:** 135
Crosscutting Concepts	
Patterns Patterns of change can be used to make predictions.	**SE/TE:** 7 **TE only:** 16a
Performance Expectation 3-PS2-3	
Ask questions to determine cause and effect relationships of electric or magnetic inter-actions between two objects not in contact with each other. **Clarification Statement** Examples of an electric force could include the force on hair from an electrically charged balloon and the electrical forces between a charged rod and pieces of paper; examples of a magnetic force could include the force between two permanent magnets, the force between an electromagnet and steel paperclips, and the force exerted by one magnet versus the force exerted by two magnets. Examples of cause and effect relationships could include how the distance between objects affects strength of the force and how the orientation of magnets affects the direction of the magnetic force.] **Assessment Boundary** Assessment is limited to forces produced by objects that can be manipulated by students, and electrical interactions are limited to static electricity.	**SE/TE:** 54, 72–73, 74–75, 82–83 **TE only:** 50d, 56a, 66a, 74-75

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Disciplinary Core Ideas	
PS2.B: Types of Interactions Electric, and magnetic forces between a pair of objects do not require that the objects be in contact. The sizes of the forces in each situation depend on the properties of the objects and their distances apart and, for forces between two magnets, on their orientation relative to each other.	**SE/TE:** 6, 28–29, 54, 57, 59, 62, 64, 70, 82–83 **TE only:** 24a, 34a, 56a
Science and Engineering Practices	
Asking Questions and Defining Problems Ask questions that can be investigated based on patterns such as cause and effect relationships.	**TE only:** 56a, 66a, 294-295, EM10-EM11
Crosscutting Concepts	
Cause and Effect Cause and effect relationships are routinely identified, tested, and used to explain change.	**SE/TE:** 70, 235 **TE only:** 56a, 66a
Performance Expectation 3-PS2-4	
Define a simple design problem that can be solved by applying scientific ideas about magnets. **Clarification Statement** Examples of problems could include constructing a latch to keep a door shut and creating a device to keep two moving objects from touching each other.	**SE/TE:** 72–73, 74–75, 82–83 **TE only:** 50d, 66a, 74-75
Disciplinary Core Ideas	
PS2.B: Types of Interactions Electric, and magnetic forces between a pair of objects do not require that the objects be in contact. The sizes of the forces in each situation depend on the properties of the objects and their distances apart and, for forces between two magnets, on their orientation relative to each other.	**TE only:** 66a

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Science and Engineering Practices	
Asking Questions and Defining Problems Define a simple problem that can be solved through the development of a new or improved object or tool.	**SE/TE:** 57, 67, 72–73, 276–277 **TE only:** 66a, EM10-EM11
Crosscutting Concepts	
Interdependence of Science, Engineering, and Technology Scientific discoveries about the natural world can often lead to new and improved technologies, which are developed through the engineering design process.	**SE/TE:** 116–117
3. Interdependent Relationships in Ecosystems	
Performance Expectation 3-LS2-1	
Construct an argument that some animals form groups that help members survive. **AR Clarification Statement:** Examples could include ant colonies, herds of bison, or hives of bees.	**SE/TE:** 225, 246–247, 226–227 **TE only:** 210d, 224a
Disciplinary Core Ideas	
LS2.D: Social Interactions and Group Behavior Being part of a group helps animals obtain food, defend themselves, and cope with changes. Groups may serve different functions and vary dramatically in size.	**SE/TE:** 226–227, 228–229 **TE only:** 224a
Science and Engineering Practices	
Engaging in Argument from Evidence Construct an argument with evidence, data, and/or a model.	**SE/TE:** 195, 279, 284–285 **TE only:** 194a, 278a, EM6-EM7, EM10-EM11, EM12-EM13
Crosscutting Concepts	
Cause and Effect Cause and effect relationships are routinely identified and used to explain change.	**SE/TE:** 70, 196, 235 **TE only:** 194a, 216a, 224a, 232a

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Performance Expectation 3-LS4-1	
Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago. **Clarification Statement** Examples of data could include type, size, and distributions of fossil organisms. Examples of fossils and environments could include marine fossils found on dry land, tropical plant fossils found in Arctic areas, and fossils of extinct organisms **Assessment Boundary** Assessment does not include identification of specific fossils or present plants and animals. Assessment is limited to major fossil types and relative ages.	**SE/TE:** 256, 259, 266, 274, 275, 284–285, 286, 288–289, 292–293, **TE only:** 252d, 258a, 268a
Disciplinary Core Ideas	
LS4.A: Evidence of Common Ancestry and Diversity Some kinds of plants and animals that once lived on Earth are no longer found anywhere.	**SE/TE:** 265 **TE only:** 258a
Fossils provide evidence about the types of organisms that lived long ago and also about the nature of their environments.	**SE/TE:** 252–253, 254–255, 256, 260, 261, 264, 265, 274, 275, 284–285, 286, 288–289, 292–293 **TE only:** 268a, 278a
Science and Engineering Practices	
Analyzing and Interpreting Data Analyze and interpret data to make sense of phenomena using logical reasoning.	**TE only:** 258a, 268a, 278a, 294-295, EM2-EM3, EM4-EM5
Crosscutting Concepts	
Scale, Proportion, and Quantity Observable phenomena exist from very short to very long time periods. **Scientific Knowledge Assumes an Order and Consistency in Natural Systems** Science assumes consistent patterns in natural systems.	**SE/TE:** 70, 235 **TE only:** 258a, 268a, 278a

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Performance Expectation 3-LS4-3	
Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all. **AR Clarification Statement** Examples of evidence could include needs and characteristics of the organisms and habitats involved. The organisms and their habitat make up a system in which the parts depend on each other for survival	**SE/TE:** 279, 283, 288–289, 292–293 **TE only:** 210d, 216a, 252d, 278a
Disciplinary Core Ideas	
LS4.C: Adaptation For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all.	**SE/TE:** 279, 292–293 **TE only:** 216a
Science and Engineering Practices	
Engaging in Argument from Evidence Construct an argument with evidence.	**TE only:** 216a, EM6-EM7, EM10-EM11, EM12-EM13
Crosscutting Concepts	
Cause and Effect Cause and effect relationships are routinely identified and used to explain change.	**SE/TE:** 70, 235 **TE only:** 216a, 232a

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Performance Expectation 3-LS4-4	
Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change. **Clarification Statement** Examples of environmental changes could include changes in land characteristics, water distribution, temperature, food, and other organisms **Assessment Boundary** Assessment is limited to a single environmental change. Assessment does not include the greenhouse effect or climate change.]	**SE/TE:** 170–171, 183, 250-251, 201, 202 **TE only:** 210d, 232a
Disciplinary Core Ideas	
LS2.C: Ecosystem Dynamics, Functioning, and Resilience When the environment changes in ways that affect a place's physical characteristics, temperature, or availability of resources, some organisms survive and reproduce, others move to new locations, yet others move into the transformed environment, and some die.	**SE/TE:** 221, 234
LS4.D: Biodiversity and Humans Populations live in a variety of habitats, and change in those habitats affects the organisms living there.	**SE/TE:** 158, 222–223, 233, 234, 235, 240, 241 **TE only:** 232a
Science and Engineering Practices	
Engaging in Argument from Evidence Make a claim about the merit of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of the problem.	**TE only:** 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:** 234

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Interdependence of Engineering, Technology and Applications of Science on Society and the Natural World Knowledge of relevant scientific concepts and research findings is important in engineering.	**SE/TE:** 111
3. Inheritance and Variation of Traits: Life Cycles and Traits	
Performance Expectation 3-LS1-1	
Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death. **Clarification Statement** Changes organisms go through during their life form a pattern. **Assessment Boundary** Assessment of plant life cycles is limited to those of flowering plants. Assessment does not include details of human reproduction	**SE/TE:** 175, 180–181, 182 **TE only:** 168d, 174a
Disciplinary Core Ideas	
LS1.B: Growth and Development of Organisms Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles.	**TE only:** 174a
Science and Engineering Practices	
Developing and Using Models Develop models to describe phenomena.	**SE/TE:** 250–251, 259 **TE only:** 174a, EM6-EM7, EM12-EM13
Scientific Knowledge is Based on Empirical Evidence Science findings are based on recognizing patterns.	**SE/TE:** 135
Crosscutting Concepts	
Patterns Patterns of change can be used to make predictions.	**SE/TE:** 7, 17, 21 **TE only:** 174a

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Performance Expectation 3-LS3-1	
Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms. **Clarification Statement** Patterns are the similarities and differences in traits shared between offspring and their parents, or among siblings. Emphasis is on organisms other than humans. **Assessment Boundary** Assessment does not include genetic mechanisms of inheritance and prediction of traits. Assessment is limited to non-human examples.	**SE/TE:** 185, 187, 188, 189, 200, 204–205, 208–209, **TE only:** 168d, 184a
Disciplinary Core Ideas	
LS3.A: Inheritance of Traits Many characteristics of organisms are inherited from their parents.	**SE/TE:** 184, 185, 186, 187, 188, 189, 200, 204–205 **TE only:** 184a
LS3.B: Variation of Traits Different organisms vary in how they look and function because they have different inherited information.	**SE/TE:** 187, 204–205 **TE only:** 184a
Science and Engineering Practices	
Analyzing and Interpreting Data Analyze and interpret data to make sense of phenomena using logical reasoning.	**SE/TE:** 101, 153, 206–207, 250–251, 256, 259, 269, 279, 292–293 **TE only:** 174a, 184a, 294-295, EM2-EM3, EM4-EM5
Crosscutting Concepts	
Patterns Similarities and differences in patterns can be used to sort and classify natural phenomena.	**SE/TE:** 16, 18, 19, 180–181, 182 **TE only:** 184a

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Performance Expectation 3-LS3-2	
Use evidence to support the explanation that traits can be influenced by the environment. **Clarification Statement** Examples of the environment affecting a trait could include normally tall plants grown with insufficient water are stunted; and, a pet dog that is given too much food and little exercise may become overweight	**SE/TE:** 195, 200, 204–205 **TE only:** 168d, 194a
Disciplinary Core Ideas	
LS3.A: Inheritance of Traits Other characteristics result from individuals' interactions with the environment, which can range from diet to learning. Many characteristics involve both inheritance and environment.	**SE/TE:** 195, 196, 197, 198–199, 200, 204–205 **TE only:** 194a
LS3.B: Variation of Traits The environment also affects the traits that an organism develops.	**SE/TE:** 195, 196, 197, 198–199, 200, 204–205 **TE only:** 194a
Science and Engineering Practices	
Constructing Explanations and Designing Solutions Use evidence (e.g., observations, patterns) to support an explanation.	**SE/TE:** 172, 256 **TE only:** EM6-EM7, EM10-EM11
Crosscutting Concepts	
Cause and Effect Cause and effect relationships are routinely identified and used to explain change.	**SE/TE:** 70, 235 **TE only:** 194a, 216a, 232a

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Performance Expectation 3-LS4-2	
Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing. **AR Clarification Statement**: Examples of cause and effect relationships could be plants of the same species with larger thorns may be less likely to be eaten; and, animals of the same species with more effective camouflage or coloration may be more likely to survive and produce offspring.	**SE/TE:** 214, 217, 219, 221, 248–249 **TE only:** 210d, 216a
Disciplinary Core Ideas	
LS4.B: Natural Selection Sometimes the differences in characteristics between individuals of the same species provide advantages in surviving, finding mates, and reproducing.	**SE/TE:** 214, 217, 219, 221, 248–249 **TE only:** 216a
Science and Engineering Practices	
Constructing Explanations and Designing Solutions Use evidence (e.g., observations, patterns) to construct an explanation.	**SE/TE:** 172, 214, 217, 256 **TE only:** 216a, EM6-EM7, EM10-EM11
Crosscutting Concepts	
Cause and Effect Cause and effect relationships are routinely identified and used to explain change.	**SE/TE:** 70, 235 **TE only:** 216a, 232a

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3. Weather and Climate	
Performance Expectation 3-ESS2-1	
Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season. **Clarification Statement** Examples of data could include average temperature, precipitation, and wind direction.] **Assessment Boundary** Assessment of graphical displays is limited to pictographs and bar graphs. Assessment does not include climate change.]	**SE/TE:** 101, 120–121, 124–125, 128–129, 131, 133, 140, 150–151, 153, 159, 160, 164–165, **TE only:** 84d, 90a, 100a
Disciplinary Core Ideas	
ESS2.D: Weather and Climate Scientists record patterns of the weather across different times and areas so that they can make predictions about what kind of weather might happen next.	**SE/TE:** 102, 106, 107 **TE only:** 90a, 100a
Science and Engineering Practices	
Analyzing and Interpreting Data Represent data in tables and various graphical displays (bar graphs, pictographs) to reveal patterns that indicate relationships.	**SE/TE:** 91, 130, 141, 159, 164–165, 183, 248–249 **TE only:** 90a, 100a
Crosscutting Concepts	
Patterns Patterns of change can be used to make predictions.	**TE only:** 90a, 100a

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Performance Expectation 3-ESS2-2	
Obtain and combine information to describe climates in different regions of the world.	**TE only:** 126d, 132a, 142a, 152a
Disciplinary Core Ideas	
ESS2.D: Weather and Climate Climate describes a range of an area's typical weather conditions and the extent to which those conditions vary over years.	**SE/TE:** 103, 120–121, 134, 139, 146, 154, 155, 157, 158, 162–163 **TE only:** 132a, 142a, 152a
Science and Engineering Practices	
Obtaining, Evaluating, and Communicating Information Obtain and combine information from books and other reliable media to explain phenomena.	**SE/TE:** 166–167 **TE only:** 132a, 142a, EM8-EM9, EM10-EM11
Crosscutting Concepts	
Patterns Patterns of change can be used to make predictions.	**TE only:** 132a, 142a, 152a

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Performance Expectation 3-ESS3-1	
Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard. **Clarification Statement** Examples of design solutions to weather-related hazards could include barriers to prevent flooding, wind resistant roofs, and lighting rods.	**SE/TE:** 98–99, 111 **TE only:** 84d, 110a
Disciplinary Core Ideas	
ESS3.B: Natural Hazards A variety of natural hazards result from natural processes. Humans cannot eliminate natural hazards but can take steps to reduce their impacts.	**SE/TE:** 98–99, 110, 112, 113, 116–117, 120–121 **TE only:** 110a
Science and Engineering Practices	
Engaging in Argument from Evidence Make a claim about the merit of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of the problem.	**TE only:** EM6-EM7, EM12-EM13
Crosscutting Concepts	
Cause and Effect Cause and effect relationships are routinely identified, tested, and used to explain change.	**SE/TE:** 70, 235 **TE only:** 110a
Influence of Engineering, Technology, and Science on Society and the Natural World Engineers improve existing technologies or develop new ones to increase their benefits (e.g., better artificial limbs), decrease known risks (e.g., seatbelts in cars), and meet societal demands (e.g., cell phones).	**SE/TE:** 6, 14–15, 111, 194, 278
Science is a Human Endeavor Science affects everyday life.	**SE/TE:** 192–193

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3-5. Engineering Design	
Performance Expectation 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.	**SE/TE:** 57, 67, 276–277 **TE only:** 50d, 276-277
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:** 14–15, 244 **TE only:** 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.	**TE only:** 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:** 14–15

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Performance Expectation 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.	**SE/TE:** 14–15, 244 **TE only:** 14-15
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	**SE/TE:** 14–15, 124, 125
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:** 242–243, 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.	**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:** 74–75

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Performance Expectation 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.	**SE/TE:** 74–75
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:** 116–117
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:** EM11, EM13
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.	**TE only:** 74-75, 294-295, EM12-EM13