

# Grade 4

Adopted 2022

## Life Science 3.1

### Structure and Function

- A. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction. 3.1.4.A
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### Growth and Development of Organisms

- na1. Not applicable at this level. 3.1.4.NA1
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### Organization for Matter and Energy Flow in Organisms

- na2. Not applicable at this level. 3.1.4.NA2
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### Information Processing

- B. 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. 3.1.4.B
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### Interdependent Relationships in Ecosystems

- na3. Not applicable at this level. 3.1.4.NA3
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### Cycles of Matter and Energy Transfer in Ecosystems

- na4. Not applicable at this level. 3.1.4.NA4
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### Ecosystem Dynamics, Functioning, and Resilience

- na5. Not applicable at this level. 3.1.4.NA5
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### Social Interactions and Group Behavior

- na6. Not applicable at this level. 3.1.4.NA6
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### Inheritance of Traits

- na7. Not applicable at this level. 3.1.4.NA7
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### Variation of Traits

- na8. Not applicable at this level. 3.1.4.NA8

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### **Evidence of Common Ancestry and Diversity**

na9. Not applicable at this level. 3.1.4.NA9

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### **Natural Selection**

na10. Not applicable at this level. 3.1.4.NA10

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### **Adaptation**

na11. Not applicable at this level. 3.1.4.NA11

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### **Biodiversity and Humans**

na12. Not applicable at this level. 3.1.4.NA12

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## **Physical Science 3.2**

### **Structure and Properties of Matter**

na1. Not applicable at this level. 3.2.4.NA1

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### **Chemical Reactions**

na2. Not applicable at this level. 3.2.4.NA2

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### **Nuclear Processes**

na3. Not applicable at this level. 3.2.4.NA3

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### **Forces and Motion**

na4. Not applicable at this level. 3.2.4.NA4

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### **Types of Interactions**

na5. Not applicable at this level. 3.2.4.NA5

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### **Definitions of Energy**

A. Use evidence to construct an explanation relating the speed of an object to the energy of that object. 3.2.4.A

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### **Conservation of Energy and Energy Transfer**

B. Make and communicate observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents. 3.2.4.B

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### **Relationship Between Energy and Forces**

C. Ask questions and predict outcomes about the changes in energy that occur when objects collide. 3.2.4.C

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### **Energy in Chemical Processes and Everyday Life**

D. Apply scientific ideas to design, test, and refine a device that converts energy from one form to another. 3.2.4.D

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**Wave Properties**

- E. Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move. 3.2.4.E

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**Electromagnetic Radiation**

- F. Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen. 3.2.4.F

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**Information Technologies and Instrumentation**

- G. Generate and compare multiple solutions that use patterns to transfer information. 3.2.4.G

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**Earth and Space  
Science 3.3****The Universe and Its Stars**

- na1. Not applicable at this level. 3.3.4.NA1

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**Earth and the Solar System**

- na2. Not applicable at this level. 3.3.4.NA2

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**The History of Planet Earth**

- A. Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time. 3.3.4.A

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**Earth Materials and Systems**

- B. Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation. 3.3.4.B

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**Plate Tectonics and Large-Scale System Interactions**

- C. Analyze and interpret data from maps to describe patterns of Earth's features. 3.3.4.C

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**The Roles of Water in Earth's Surface Processes**

- na3. Not applicable at this level. 3.3.4.NA3

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**Weather and Climate**

- na4. Not applicable at this level. 3.3.4.NA4

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**Biogeology**

- na5. Not applicable at this level. 3.3.4.NA5

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**Natural Resources**

- D. Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment. 3.3.4.D

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### **Natural Hazards**

- E. Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans. 3.3.4.E

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### **Human Impact on Earth Systems**

- na6. Not applicable at this level. 3.3.4.NA6

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## **Environmental Literacy & Sustainability 3.4**

### **Agricultural Systems**

- A. Analyze how living organisms, including humans, affect the environment in which they live, and how their environment affects them. 3.4.3-5.A

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### **Environment and Society**

- B. Make a claim about the environmental and social impacts of design solutions and civic actions, including their own actions. 3.4.3-5.B

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### **Watersheds and Wetlands**

- C. Examine ways you influence your local environment and community by collecting and displaying data. 3.4.3-5.C

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### **Investigating Environmental Issues**

- D. Develop a model to demonstrate how local environmental issues are connected to larger local environment and human systems. 3.4.3-5.D

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### **Environmental Experiences**

- na1. Refer to other standards in this document to build a learning progression. 3.4.3-5.NA1

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### **Evaluating Solutions**

- E. Construct an argument to support whether action is needed on a selected environmental issue and propose possible solutions. 3.4.3-5.E

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### **Environmental Sustainability**

- na2. Refer to other standards in this document to build a learning progression. 3.4.3-5.NA2

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### **Environmental Stewardship**

- F. Critique ways that people depend on and change the environment. 3.4.3-5.F

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### **Environmental Justice**

- G. Investigate how perspectives over the use of resources and the development of technology have changed over time and resulted in conflict over the development of societies and nations. 3.4.3-5.G
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## Technology & Engineering 3.5

### Applying, Maintaining, and Assessing Technological Products and Systems

- A. Use appropriate symbols, numbers, and words to communicate key ideas about technological products and systems. 3.5.3-5.A
- B. Examine information to assess the trade-offs to using a product or system. 3.5.3-5.B
- C. Follow directions to complete a technological task. 3.5.3-5.C
- D. Predict how certain aspects of their daily lives would be different without given technologies. 3.5.3-5.D
- E. Explain why responsible use of technology requires sustainable management of resources. 3.5.3-5.E
- F. Classify resources used to create technologies as either renewable or nonrenewable. 3.5.3-5.F
- G. Describe the helpful and harmful effects of technology. 3.5.3-5.G
- H. Determine factors that influence changes in a society's technological systems or infrastructure. 3.5.3-5.H
- I. Design solutions by safely using tools, materials, and skills. 3.5.3-5.I
- J. Explain how technologies are developed or adapted when individual or societal needs and wants change. 3.5.3-5.J
- K. Judge technologies to determine the best one to use to complete a given task or meet a need. 3.5.3-5.K
- L. Demonstrate how tools and machines extend human capabilities, such as holding, lifting, carrying, fastening, separating, and computing. 3.5.3-5.L

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### Design and Design Thinking in Technology and Engineering Education

- M. Demonstrate essential skills of the engineering design process. 3.5.3-5.M
- N. Identify why a product or system is not working properly. 3.5.3-5.N
- O. Describe requirements of designing or making a product or system. 3.5.3-5.O
- P. Evaluate the strengths and weaknesses of existing design solutions, including their own solutions. 3.5.3-5.P
- Q. Practice successful design skills. 3.5.3-5.Q
- R. Apply tools, techniques, and materials in a safe manner as part of the design process. 3.5.3-5.R
- S. Illustrate that there are multiple approaches to design. 3.5.3-5.S
- T. Apply universal principles and elements of design. 3.5.3-5.T
- U. Evaluate designs based on criteria, constraints, and standards. 3.5.3-5.U
- V. Interpret how good design improves the human condition. 3.5.3-5.V

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### **Integration of Knowledge, Technologies, and Practices**

- W.** Describe the properties of different materials. [3.5.3-5.W](#)
- X.** Explain how various relationships can exist between technology and engineering and other content areas. [3.5.3-5.X](#)
- Y.** Identify the resources needed to get a technical job done, such as people, materials, capital, tools, machines, knowledge, energy, and time [3.5.3-5.Y](#)
- Z.** Create a new product that improves someone's life. [3.5.3-5.Z](#)

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### **Nature and Characteristics of Technology and Engineering**

- AA.** Create representations of the tools people made, how they cultivated to provide food, made clothing, and built shelters to protect themselves. [3.5.3-5.AA](#)
- BB.** Illustrate how, when parts of a system are missing, it may not work as planned. [3.5.3-5.BB](#)
- CC.** Describe how a subsystem is a system that operates as a part of another larger system. [3.5.3-5.CC](#)
- DD.** Demonstrate how simple technologies are often combined to form more complex systems. [3.5.3-5.DD](#)
- EE.** Explain how solutions to problems are shaped by economic, political, and cultural forces. [3.5.3-5.EE](#)
- FF.** Compare how things found in nature differ from things that are human-made, noting differences and similarities in how they are produced and used. [3.5.3-5.FF](#)
- GG.** Describe the unique relationship between science and technology, and how the natural world can contribute to the human-made world to foster innovation. [3.5.3-5.GG](#)
- HH.** Differentiate between the role of scientists, engineers, technologists, and others in creating and maintaining technological systems. [3.5.3-5.HH](#)