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## **Correlation to Next Generation Science Standards Disciplinary Core Ideas**

and ScienceSaurus<sup>®</sup>:

Meet higher standards with high-quality K–5 science resources from HMH<sup>®</sup>!

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**Science and Engineering Leveled Readers** 

> **Grade K Teacher Guide English and Spanish**

Houghton Mifflin Harcourt's new Science and Engineering Leveled Readers and updated ScienceSaurus provide content to address the Next Generation Science Standards\* (NGSS). The charts that follow-found at the front of each grade's Leveled Readers Teacher Guide—provide a correlation for both resources to the NGSS.



GRADE K

### K-PS2 Motion and Stability: Forces and Interactions Students who demonstrate understanding can: Plan and conduct an investigation to compare the effects of different strengths or different directions K-PS2-1. of pushes and pulls on the motion of an object. K-PS2-2. Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull. Science and Engineering Disciplinary Core Crosscutting Practices Ideas Concepts **Planning and Carrying Out PS2.A: Forces and Motion Cause and Effect** Investigations • Simple tests can be designed to gather **PS2.B:** Types of evidence to support or refute student ideas **Analyzing and Interpreting Data** Interactions about causes. **PS3.C: Relationships** Leveled Readers **Between Energy and** Leveled Readers Unit 1 OL/ES How Do You Do Forces **Unit 1 OL/ES** How Do You Do Science?. Science?, EN How a Scientist Works EN How a Scientist Works ScienceSaurus ScienceSaurus (Yellow Level) (Yellow Level) ScienceSaurus (Yellow Level) Doing Science, Doing an Investigation, Physical Science, Motion Doing Science, Doing an Investigation, pp. 4–7 and Forces, pp. 110–114 pp. 4–7 ETS1: A Defining Physical Science, Motion and Forces, Connections to the Nature of Science Engineering Problems pp. 110–114 Scientific Investigations Use a Variety Leveled Readers of Methods Unit 1 OL/ES How Can Leveled Readers We Solve Problems?, Unit 1 OL/ES How Do You Do EN Make a Better Bird Science?. EN How a Scientist Works Feeder ScienceSaurus (Yellow Level) ScienceSaurus (Yellow Level) Doing Science, Science Is Observing, pp. 2–3 Doing Science, Using the Design Process, Doing Science, Using Science Tools, pp. 12–15 pp. 8–11

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## K-PS3 Energy

Students who K-PS3-1. K-PS3-2.	demonstrate understandin Make observations to dete Use tools and materials to sunlight on an area.	<b>g can:</b> rmine the effect o design and build
Scien	ce and Engineering Practices	Disciplin Ide
Planning and Investigation	l Carrying Out s	PS3.B: Conse of Energy and Transfer
Constructing Designing So	Explanations and olutions	ScienceSa
Leveled Re Unit 1 OL/ Science?, I Unit 2 OL/ Problems?, Feeder	eaders ES How Do You Do EN How a Scientist Works ES How Can We Solve EN Make a Better Bird	Physical Sci pp. 104–109
ScienceSa Doing Scien pp. 2–3 Doing Scien pp. 8–11 Doing Scien Process, pp	<i>urus</i> (Yellow Level) ce, Science Is Observing, ce, Using Science Tools, ce, Using the Design .12–15	
Connection Scientific Inv of Methods	ons to Nature of Science restigations Use a Variety	
Leveled Re Unit 1 OL/	eaders ES How Do You Do EN How a Scientist Works	

## ScienceSaurus (Yellow Level) Doing Science, Using Science Tools, pp. 8–11

**GRADE K** 

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of sunlight on Earth's surface. Id a structure that will reduce the warming effect of

nary Core easCrosscutting Conceptservation ad EnergyCause and Effect • Events have causes that generate observable patternspurus vel) ience, Energy, 9ScienceSaurus (Yellow Level) Physical Science, Energy, pp. 104–109	
ervation Id EnergyCause and Effect • Events have causes that generate observable patternsourus vel) ience, Energy, 9ScienceSaurus (Yellow Level) Physical Science, Energy, pp. 104–109	nary Core eas
ScienceSaurus (Yellow Level) Physical Science, Energy, pp. 104–109	ervation Id Energy
	yel) ience, Energy, 9

## K-LS1 From Molecules to Organisms: Structures and Processes

## Students who demonstrate understanding can:

**GRADE K** 

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Use observations to describe patterns of what plants and animals (including humans) need to K-LS1-1. survive.

Analyzing and Interpreting DataLS1.C: Organization for Matter an Energy Flow in OrganismsPatternsLeveled ReadersUnit 1 OL/ES How Do You Do Science?, EN How a Scientist WorksLeveled Readers• Patterns in the natural and human designer world can be observed and used as eviderScienceSaurus (Yellow Level)Leveled ReadersUnit 9 OL/ES What Can We Learn About Animals?Unit 1 OL/ES How Do You Do Science EN How a Scientist WorksScientific Knowledge is Based on Empirical EvidenceScienceSaurus (Yellow Level)Unit 10 OL/ES What Are Plants?, EN Inside a SeedUnit 10 OL/ES What Are Plants?, EN Inside a SeedLeveled Readers Unit 1 OL/ES How Do You Do Science?, EN How a Scientist WorksScienceSaurus (Yellow Level)Science, What Plants Animals Need, pp. 21–22Science, What Animals Need, pp. 29–31Leveled Readers Unit 1 OL/ES How Do You Do Science?, EN How a Scientist WorksLife Science, What Animals Need, pp. 29–31Science, What Animals Need, pp. 29–31	Science and Engineering	Disciplinary Core	Crosscutting
	Practices	Ideas	Concepts
рр. 2—3	Analyzing and Interpreting Data Leveled Readers Unit 1 OL/ES How Do You Do Science?, EN How a Scientist Works ScienceSaurus (Yellow Level) Doing Science, Science Is Observing, pp. 2–3 Connections to Nature of Science Scientific Knowledge is Based on Empirical Evidence Leveled Readers Unit 1 OL/ES How Do You Do Science?, EN How a Scientist Works ScienceSaurus (Yellow Level) Doing Science, Science Is Observing, pp. 2–3	LS1.C: Organization for Matter an Energy Flow in Organisms Leveled Readers Unit 9 OL/ES What Can We Learn About Animals? Unit 10 OL/ES What Are Plants?, EN Inside a Seed ScienceSaurus (Yellow Level) Life Science, What Plants Need, pp. 21–22 Life Science, What Animals Need, pp. 29–31	<ul> <li>Patterns</li> <li>Patterns in the natural and human designed world can be observed and used as evidence</li> <li>Leveled Readers</li> <li>Unit 1 OL/ES How Do You Do Science?, EN How a Scientist Works</li> <li>Unit 9 OL/ES What Can We Learn About Animals?, EN Animal Groups</li> <li>Unit 10 OL/ES What Are Plants?, EN Inside a Seed</li> <li>ScienceSaurus (Yellow Level)</li> <li>Life Science, What Plants Need, pp. 21–22</li> <li>Life Science, What Animals Need, pp. 29–31</li> </ul>

## K-ESS2 Earth's Systems

## Students who demonstrate understanding can:

K-ESS2-1.	Use and share observations	of local weath
K-ESS2-2.	Construct an argument support change the environment to reasonable to the environment to reasonable the environment to reasona	ported by evide meet their need
Scienc	e and Engineering Practices	Discipli Id

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	
Analyzing and Interpreting Data	ESS2.D: Weather and	Patterns	
Engaging in Argument from Evidence	Climate	• Patterns in the natural world can be observed,	
Leveled Readers	ESS2.E: Biogeology	evidence.	
Unit 1 OL/ES How Do You Do	ESS2.E: Human Impacts on Earth Systems	Systems and System Models	
Science?, EN How a Scientist Works	Leveled Readers	Systems in the natural and designed world     have parts that work together	
ScienceSaurus (Yellow Level) Doing Science, Science Is Observing,	<b>Unit 6</b> OL/ES What Are Some Natural	Leveled Readers	
pp. 2–3	Resources?, EN Saving Water	<b>Unit 7</b> OL/ES How Can We Describe Weather and Seasons?, EN Sun, Storm,	
	Unit 7 OL/ES How Can	Sun Again	
Science Knowledge is Based on Empirical Evidence	We Describe Weather and Seasons?, EN Sun.	<b>Unit 8</b> OL/ES What Is in the Sky?, EN Patterns in the Sky	
<b>Unit 1 OL/ES</b> <i>How Do You Do</i> <i>Science?</i> , <b>EN</b> <i>How a Scientist Works</i> Doing Science, Science Is Observing, pp. 2–3	Storm, Sun Again ScienceSaurus (Yellow Level) Life Science, Caring for Resources, pp. 88–89	ScienceSaurus (Yellow Level) Doing Science, Science Is Observing, pp. 2–3 Life Science, Caring for Resources, pp. 88–89	

ner conditions to describe patters over time. lence for how plants and animals (including humans) can ds.

K-ESS3 Earth and Human Activity         Students who demonstrate understanding can:         K-ESS3-1. Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live.         K-ESS3-1. Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.         Science and Engineering Practices         Disciplinary Core Ideas         Concepts         Science and Engineering Problems         Disciplinary Core Ideas         Consecuting Concepts         Size colspan="2">Cause and Edition the instrain and designed world have parts that work together.         Note colspan="2">Cause and Edited         Size colspan="2">Concestaurus (Yellow Level)         Ding Science, Science Is Observing, pp. 2–3         Condecestaurus (Yellow Level)         Ding Science, Science Is Observing, pp. 2–3         Ding S			
Students who demonstrate understanding can:         K-ESS3-1.       Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live.         K-ESS3-2.       Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.         K-ESS3-3.       Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.         Science and Engineering Practices       Disciplinary Core Ideas         Science and Engineering Practices       ESS3.8: Natural Resources         ESS3.8: Natural Nazords       ESS3.8: Natural Resources         ESS3.8: Natural Nazords       ESS3.8: Natural Nazords         Boreologing and Using Wodels       Unit 4 OL/ES What Are Some Natural Resources?, EN Saving Water         Unit 1 OL/ES How Can We Describe Weather and Seasons?, EN Sun, Storm, Sun Again       Systems in the natural and designed world have paris that work together.         Vail 2 OL/ES How Can We Describe Weather and Seasons?, EN Sun, Storm, Sun Again       Science Saurus (Yellow Level)         Vellow Level)       Dis Science, Caring for Resources, pp. 88–99       ETS1.8: Developing Possible Solutions Usi 11 OL/ES How Can We Solve Problems?, EN Make a Better Bird Feeder         Science Saurus (Yellow Level)       Doing Science, Science Is Observing, pp. 2–3       Connectons to Engineering, Technology, and Zeince on Society and the Natural World Veery day.	K-ESS3 Earth an	nd Human Activity	
Science and Engineering Practices       Disciplinary Core Ideas       Crosscutting Concepts         Asking Questions and Defining Problems       ESS3.A: Natural Resources       ESS3.B: Natural Hazards         Developing and Using Models       ESS3.B: Natural Hazards       ESS3.B: Natural Hazards         Dotaining, Evaluating, and Communicating Information       Eveled Readers       Eveled Readers         Unit 1 OL/ES How Do You Do Science?, EN We Solve Problems?, EN Make a Better Bird Feeder       Leveled Readers       Unit 7 OL/ES How Can We Solve Problems?, EN Make a Better Bird Feeder       ScienceSaurus (Yellow Level)       ScienceSaurus (Yellow Level)         Doing Science, Doing an Investigation, pp. 2–3       ETS1.B: Developing Possible Solutions Unit 2 OL/ES How Can We Solve Problems?, EN Make a Better Bird Feeder       ScienceSaurus (Yellow Level)         Doing Science, Doing an Investigation, pp. 4–7       ETS1.B: Developing Possible Solutions Unit 2 OL/ES How Can We Solve Problems?, EN Make a Better Bird Feeder       Interdependence of Science, Engineering, Test. B: Developing Possible Solutions Unit 2 OL/ES How Do You Do Science?, EN How a Scientist Works Unit 2 OL/ES How Can We Solve Problems?, EN Make a Better Bird Feeder       Interdependence of Science, Engineering, Technology, and Science on Society and the Natural World       -People depend on various technology, and Science on Society and the Natural World       -People depend on various technology, and Science on Society and the Natural World       -People depend on various technology, and Science Scientist Works       -People depend on various technology, and Science Scie	Students who demonstrate isK-ESS3-1.Use a model (including huK-ESS3-2.Ask questions respond to, sK-ESS3-3.Communicate living things	understanding can: to represent the relationship between the nee imans) and the places they live. s to obtain information about the purpose of evere weather. e solutions that will reduce the impact of hum in the local environment.	eds of different plants and animals weather forecasting to prepare for, and nans on the land, water, air, and/or other
<ul> <li>Asking Questions and Defining Problems</li> <li>Developing and Using Models</li> <li>Obtaining, Evaluating, and Communicating Information</li> <li>Leveled Readers</li> <li>Unit 1 OL/ES How Do You Do Science?, EN Saving Water</li> <li>Unit 2 OL/ES How Can We a Better Bird Feeder</li> <li>ScienceSaurus (Yellow Level)</li> <li>Disf Science, Science Is Observing, pp. 2–3</li> <li>Doing Science, Science Is Observing, pp. 2–3</li> <li>Ding Science, Science Is Observing, pp. 2–3</li> <li>Ding Science, Science Is Observing, pp. 2–3</li> <li>Doing Science, Science Is Observing, Pp.</li></ul>	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Doing Science, p. 1	Asking Questions and Defining Problems Developing and Using Models Dbtaining, Evaluating, and Communicating Information Leveled Readers Unit 1 OL/ES How Do You Do Science?, EN How a Scientist Works Unit 2 OL/ES How Can We Solve Problems?, EN Make a Better Bird Feeder ScienceSaurus (Yellow Level) Doing Science, Science Is Observing, pp. 2–3 Doing Science, Doing an Investigation, pp. 4–7	Ideas ESS3.A: Natural Resources ESS3.B: Natural Hazards ESS3.C: Human Impacts on Earth Systems Leveled Readers Unit 6 OL/ES What Are Some Natural Resources?, EN Saving Water Unit 7 OL/ES How Can We Describe Weather and Seasons?, EN Sun, Storm, Sun Again ScienceSaurus (Yellow Level) Life Science, Caring for Resources, pp. 88–89 ETS1.A: Defining and Delimiting an Engineering Problem ETS1.B: Developing Possible Solutions Unit 1 OL/ES How Do You Do Science?, EN How a Scientist Works Unit 2 OL/ES How Can We Solve Problems?, EN Make a Better Bird Feeder ScienceSaurus (Yellow Level) Doing Science, Science Is Observing, pp. 2–3 Doing Science, Doing an Investigation, pp. 4–7 Doing Science, Using the Design Process, pp. 12–15	<ul> <li>Concepts</li> <li>Cause and Effect <ul> <li>Events have causes that generate observable patterns.</li> </ul> </li> <li>Systems and System Models <ul> <li>Systems in the natural and designed world have parts that work together.</li> </ul> </li> <li>Leveled Readers <ul> <li>Unit 7 OL/ES How Can We Describe Weather and Seasons?, EN Sun, Storm, Sun Again</li> </ul> </li> <li>ScienceSaurus (Yellow Level) <ul> <li>Doing Science, Science Is Observing, pp. 2–3</li> <li>Connections to Engineering, Technology, and Applications of Science</li> </ul> </li> <li>Interdependence of Science, Engineering, and Technology <ul> <li>People encounter questions about the natural world every day.</li> </ul> </li> <li>Influence of Engineering, Technologies in their lives; human life would be very different without technology.</li> <li>Leveled Readers <ul> <li>Unit 1 OL/ES How Can We Solve Problems?, EN Make a Better Bird Feeder</li> <li>ScienceSaurus (Yellow Level)</li> <li>Doing Science, p. 1</li> </ul> </li> </ul>

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## **Science and Engineering Leveled Readers**

## Grade 1 **Teacher Guide** English and Spanish





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

## Students who demonstrate understanding can:

- **1-PS4-1.** Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.
- **1-PS4-2.** Make observations to construct an evidence-based account that objects can be seen only when illuminated.
- **1-PS4-3.** Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light.
- **1-PS4-4.** Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Planning and Carrying Out	PS4.A: Wave Properties	Cause and Effect
Constructing Explanations and	PS4.B: Electromagnetic Radiation	<ul> <li>Simple tests can be designed to gather evidence to support or refute student ideas</li> </ul>
Designing Solutions	PS4.C: Information	about causes.
Leveled Readers	lechnologies and Instrumentation	Leveled Readers
Unit 1 OL/ES How Do You Investigate?, EN Making a Car Go	Leveled Readers	EN Making a Car Go Faster
Faster	Unit 4 OL/ES How What	ScienceSaurus (Yellow Level)
ScienceSaurus (Yellow Level)	Are Forces and Energy?	Doing Science, Doing an Investigation,
Doing Science, Science Is Observing, pp. 2–3	ScienceSaurus (Yellow Level)	pp. 4—7
Doing Science, Doing an Investigation, pp. 4–7	Physical Science, Energy, pp. 104–109	Connections to Engineering, Technology, and Applications to Science
Doing Science, Using Science Tools, pp. 8–11		Influence of Engineering, Technology, and Science on Society and the Natural World
Connections to the Nature of Science		<ul> <li>People depend on various technologies in their lives; human life would be very different</li> </ul>
Scientific Investigations Use a Variety		without technology.
of Methods		Leveled Readers
Leveled Readers Unit 1 OL/ES How Do You Investigate?, EN Making a Car Go Faster		<b>Unit 2 OL/ES</b> How Do Engineers Solve Problems?
ScienceSaurus (Yellow Level) Doing Science, Doing an Investigation, pp. 4–7		

## 1-LS1 From Molecules to Organisms: Structures and Processes

1-LS1-1. 1-LS1-2.	Use materials to design a use their external parts to Read texts and use media offspring survive.	a solution to a hur b help them surviv a to determine pat
Science	e and Engineering Practices	Disciplii Id
Constructing Ex Designing Solu	xplanations and itions	LS1.A: Struc Function
Obtaining, Eva Communicating	luating, and g Information	LS1.B: Grow Developmen
Leveled Rea Unit 1 OL/ES Investigate?, Go Faster	<b>ders</b> S How Do You EN Making a Car	LS1.D: Inform Processing Leveled Re
ScienceSaur Doing Science Process, pp. 1	<b>rus (Yellow Level)</b> , Using the Design 2–15	Unit 9 OL/ Can We Le Animals?, I Animals
Connections Scientific Know Empirical Evide	s to Nature of Science vledge Is Based on ence	<b>Unit 10</b> Ol a Plant?, <b>E</b> Wacky Pla
Leveled Rea Unit 1 OL/ES Investigate?, Go Faster	ders S How Do You EN Making a Car	ScienceSa (Yellow Lev Life Science pp. 20–26 Life Science
ScienceSaur Doing Science pp. 2–3	rus (Yellow Level) e, Science Is Observing,	рр. 29–37

nan problem by mimicking how plants and/or animals /e, grow, and meet their needs.

terns in behavior of parents and offspring that help

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**'ES** What earn About EN Amazing

L/ES What Is N Weird and nts

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v**el)** e, Plants,

, i iunto,

, Animals,

### Crosscutting Concepts

## Patterns

• Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.

## **Structure and Function**

• The shape and stability of structures of natural and designed objects are related to their function(s).

## Leveled Readers

**Unit 9 OL/ES** What Can We Learn About Animals?, **EN** Amazing Animals

**Unit 10 OL/ES** *What Is a Plant?*, **EN** *Weird and Wacky Plants* 

## ScienceSaurus (Yellow Level) Life Science, Plants, pp. 20–26 Life Science, Animals, pp. 29–37

Connections to Engineering, Technology, and Science on Society and the Natural World

## Influence of Engineering, Technology, and Science on Society and the Natural World

• Every human-made product is designed by applying some knowledge of the natural world as is built by using natural materials.

## Leveled Readers Unit 2 OL/ES How Do Engineers Solve Problems?

## ScienceSaurus (Yellow Level) Doing Science, Using the Design Process, pp. 12–15

1-LS3 Heredity:	Inheritance and	Variation of	<b>Traits</b>
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## Students who demonstrate understanding can:

1-LS3-1. Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.

Science and Engineering	Disciplinary Core	Crosscutting
Practices	Ideas	Concepts
Constructing Explanations and Designing Solutions Leveled Readers Unit 1 OL/ES How Do You Investigate?, EN Making a Car Go Faster ScienceSaurus (Yellow Level) Doing Science, Science Is Observing, pp. 2–3	LS3.A: Inheritance of Traits LS3.A: Variation of Traits Leveled Readers Unit 9 OL/ES What Can We Learn About Animals?, EN Amazing Animals Unit 10 OL/ES What Is a Plant?, EN Weird and Wacky Plants ScienceSaurus (Yellow Level) Life Science, How Plants Grow, pp. 26–28 Life Science, Animal Life Cycles, pp. 40–45	<ul> <li>Patterns</li> <li>Patterns in the natural world can be observed used to describe phenomena, and used as evidence.</li> <li>Leveled Readers</li> <li>Unit 9 OL/ES What Can We Learn About Animals?, EN Amazing Animals</li> <li>Unit 10 OL/ES What Is a Plant?, EN Weird and Wacky Plants</li> <li>ScienceSaurus (Yellow Level)</li> <li>Life Science, How Plants Grow, pp. 26–28</li> <li>Life Science, Animal Life Cycles, pp. 40–45</li> </ul>

## 1-ESS1 Earth's Place in the Universe

## Students who demonstrate understanding can:

1-ESS1-1. 1-ESS1-2.	Use observations of the s Make observations at diff	un, moon, and s ferent times of ye
Scien	ce and Engineering Practices	Discipli Ic
Planning and Investigations	Carrying Out	ESS1.A: The Its Stars
Analyzing and	I Interpreting Data	ESS1.A: Ear Solar Syste
Unit 1 OL/I Investigate? Faster ScienceSau Doing Scient pp. 2–3 Doing Scient pp. 4–7	ES How Do You P, EN Making a Car Go <b>urus (Yellow Level)</b> ce, Science Is Observing, ce, Doing an Investigation,	Leveled R Unit 7 OL Does the S Change?, Look at Te ScienceSa (Yellow Le Earth Scier the Sky, pp Earth Scier p. 69 Earth Scier p. 70 Earth Scier Earth Scier p. 70

stars to describe patterns that can be predicted. ear to relate the amount of daylight to the time of year.

## nary Core leas e Universe and Patterns rth and the m Readers L/ES How Sky Seem to EN A Closer elescopes

## aurus evel)

- nce, Observing 0.74–75 nce, Day and 78–79 nce, Spring,
- nce, Summer,
- nce, Fall, p. 71 nce, Winter,

## Crosscutting Concepts

• Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.

## Leveled Readers

**Unit 7 OL/ES** How Does the Sky Seem to Change?, EN A Closer Look at Telescopes

## ScienceSaurus (Yellow Level)

Earth Science, Observing the Sky, pp. 74–75
Earth Science, Day and Night, pp. 78–79
Earth Science, Spring, p. 69
Earth Science, Summer, p. 70
Earth Science, Fall, p. 71
Earth Science, Winter, p. 72

Connections to Nature of Science

## Scientific Knowledge Assumes an Order and Consistency in Natural Systems

- Science assumes natural events happen today as they happened in the past.
- Many events are repeated.

## Leveled Readers

**Unit 7 OL/ES** How Does the Sky Seem to Change?, EN A Closer Look at Telescopes

## ScienceSaurus (Yellow Level)

Earth Science, Observing the Sky, pp. 74–75 Earth Science, Day and Night, pp. 78–79 Earth Science, Spring, p. 69 Earth Science, Summer, p. 70 Earth Science, Fall, p. 71 Earth Science, Winter, p. 72



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## Science and Engineering Leveled Readers

**Grade 2 Teacher Guide** English and Spanish





## 2-PS1 Matter and Its Interactions

## Students who demonstrate understanding can:

Students who	demonstrate understanding	g can:		
2-P\$1-1.	Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.			
2-PS1-2.	Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.			
2-P\$1-3.	<ul> <li>Make observations to construct an evidence-based account of how an object made of a small set or pieces can be disassembled and made into a new object.</li> </ul>			
2-P\$1-4.	Construct an argument with reversed and some cannot.	n evidence that some changes o	caused by heating or cooling can be	
Scien	ce and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	
Planning and Carrying Out Investigations		PS1.A: Structure and Properties of Matter	Patterns • Patterns in the natural and human designed	
Analyzing an	d Interpreting Data	PS2.B: Chemical	world can be observed.	
Constructing	Explanations and	Reactions	Cause and Effect	
Designing Solutions Engaging in Argument from Evidence Leveled Readers Unit 1 OL/ES How Can I Think Like a Scientist?, EN How Scientists Explore Our World Unit 2 OL/ES How Do Engineers Solve Problems?, EN Ben's Engineering Project ScienceSaurus (Red Level) Doing Science, Science Is Observing, pp. 2–7 Doing Science, Doing an Investigation, pp. 8–25 Doing Science, Using Science Tools, pp. 50–67		Leveled Readers Unit 5 OL/ES What Can	Events have causes that generate observable patterns.	
		We Learn About Matter?	evidence to support or refute student ideas	
		ScienceSaurus (Red Level) Physical Science, Matter, pp. 236–253	about causes. Energy and Matter • Objects may break into smaller pieces and be put together into larger pieces, or change shapes. Leveled Readers Unit 5 OL/ES What Can We Learn Abo Matter?, EN Making Coins ScienceSaurus (Red Level) Physical Science, Matter, pp. 236–253 Connections to Engineering, Technology and Applications to Science	
Connection: Science Mod and Theories Phenomena Leveled Re Unit 1 OL/ Scientist?, I Our World ScienceSa Doing Scien pp. 2–7	s to the Nature of Science lels, Laws, Mechanisms, Explain Natural eaders ES How Can I Think Like a EN How Scientists Explore urus (Red Level) Ice, Science Is Observing,		<ul> <li>Influence of Engineering, Technology, and Science on Society and the Natural World</li> <li>Every human-made product is designed by applying some knowledge of the natural world as is built by using natural materials.</li> <li>Leveled Readers</li> <li>Unit 5 OL/ES What Can We Learn About Matter?, EN Making Coins</li> <li>ScienceSaurus (Red Level)</li> <li>Physical Science, Matter, pp. 236–253</li> </ul>	

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## 2-LS2 Ecosystems: Interactions, Energy, and Dynamics

<ul><li>2-LS2-1. Plan and conduct an investi</li><li>2-LS2-2. Develop a simple model that plants.</li></ul>	gation to dete at mimics the
Science and Engineering Practices	Discipl I
Developing and Using Models Planning and Carrying Out Investigations	LS2.A: Inde Relationsh Ecosystem
Leveled Readers Unit 1 OL/ES How Can I Think Like a Scientist?, EN How Scientists Explore Our World	Leveled F Unit 8 O Do Plants Need?, E Fair Proje
ScienceSaurus (Red Level) Doing Science, Science Is Observing, pp. 2–7 Doing Science, Doing an Investigation, pp. 8–25 Doing Science, Using Science Tools, pp. 50–67	Unit 9 O Living Th in Their E EN Meet Monarch ScienceS (Red Lev Life Scien Plants Ne Life Scien Need Eacl ETS1.B: De Possible S Unit 2 O Do Engir Problems Engineer
	ScienceS Level) Doing Sci Technolog

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mine if plants need sunlight and water to grow. Inction of an animal in dispersing seeds or pollinating

### nary Core eas

### pendent os in

## eaders

**'ES** What and Animals My Science t

**IES** How Do ngs Survive nvironment?, ne Amazing Butterfly

## urus

e, What Do I, pp. 86–87 9, Living Things Other, p. 151

## eloping utions

**/ES** How ers Solve ?, **EN** Ben's og Project

## urus (Red

nce, Designing , pp. 74–77

### Crosscutting Concepts

## **Cause and Effect**

• Events have causes that generate observable patterns.

## **Structure and Function**

• The shape and stability of structures of natural and designed objects are related to their functions.

## Leveled Readers

**Unit 2** OL/ES How Do Engineers Solve Problems?, EN Ben's Engineering Project

**Unit 8 OL/ES** *What Do Plants and Animals Need?*, **EN** *My Science Fair Project* 

**Unit 9** OL/ES How Do Living Things Survive in Their Environment?, EN Meet the Amazing Monarch Butterfly

## ScienceSaurus (Red Level)

Life Science, What Do Plants Need, pp. 86–87 Life Science, Living Things Need Each Other, p. 151 Doing Science, Designing Technology, pp. 74–77

# GRADE 2 17

2-LS4 Biological Evolution: Unity and Diversity				
Students who demonstrate understanding can:2-LS4-1.Make observations of plants and animals to compare the diversity of life in different habitats.				
Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts		
Planning and Carrying Out Investigations	LS4.D: Biodiversity and Humans			
<ul> <li>Leveled Readers</li> <li>Unit 1 OL/ES How Does a Scientist Investigate?, EN Zoom into Science</li> <li>ScienceSaurus (Red Level) Doing Science, Science Is Observing, pp. 2–7</li> <li>Connections to Nature of Science</li> <li>Scientific Knowledge is Based on Empirical Evidence</li> <li>Scientists look for patterns and order when making observations about the world.</li> <li>Leveled Readers</li> <li>Unit 1 OL/ES How Does a Scientist Investigate?, EN Zoom into Science</li> <li>ScienceSaurus (Red Level) Doing Science, Science Is Observing, pp. 2–7</li> <li>Doing Science, Look at the Data, pp. 2–7</li> </ul>	Leveled Readers Unit 9 OL/ES How Do Living Things Survive in Their Environment?, EN Meet the Amazing Monarch Butterfly ScienceSaurus (Red Level) Life Science, Ecosystems, p. 129 Life Science, Kinds of Ecosystems, pp. 130–131			

## 2-ESS1 Earth's Place in the Universe

## Students who demonstrate understanding can:

**2-ESS1-1.** Use information from several sources to provide evidence that Earth events can occur quickly or slowly.

3			
Science and Engineering	Disciplinary Core	Crosscutting	
Practices	Ideas	Concepts	
Constructing Explanations and	ESS1.C: The History of	Stability and Change	
Designing Solutions	Planet Earth	• Things may change slowly or rapidly.	
<b>_eveled Readers</b> <b>Unit 1 OL/ES</b> <i>How Does a Scientist</i> <i>Investigate?,</i> <b>EN</b> <i>Zoom into Science</i> <b>Unit 2 OL/ES</b> <i>How Do Engineers</i> <i>Solve Problems?,</i> <b>EN</b> <i>Ben's</i> <i>Engineering Project</i> <b>ScienceSaurus (Red Level)</b> Doing Science, Science Is Observing, pp. 2–7 Doing Science, Share Your Results, p. 24	ScienceSaurus (Red Level) Earth Science, Slow Changes to Earth's Surface, pp. 168–171 Earth Science, Fast Changes to Earth's Surface, pp. 172–175	<i>ScienceSaurus</i> (Red Level) Earth Science, Slow Changes to Earth's Surface, pp. 168–171 Earth Science, Fast Changes to Earth's Surface, pp. 172–175	

GRADE 2 19

## 2-ESS2 Earth's Systems

## Students who demonstrate understanding can:

2-ESS2-1.	Compare multiple solutions designed to slow or prevent wind or water from changing the shape of
	the land.

- 2-ESS2-2. Develop a model to represent the shapes and kinds of land and bodies of water in the area.
- 2-ESS2-3. Obtain information to identify where water is found on Earth and that it can be solid or liquid.

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Developing and Using Models Constructing Explanations and Designing Solutions Obtaining, Evaluating, and Communicating Information	ESS2.A: Earth Materials and Systems ESS2.B: Plate Tectonics and Large-Scale System Interactions	Patterns • Patterns in the natural world can be observed Stability and Change • Things change slowly or rapidly.
Leveled Readers Unit 1 OL/ES How Can I Think Like a Scientist?, EN How Scientists Explore Our World Unit 2 OL/ES How Do Engineers Solve Problems?, EN Ben's Engineering Project	ESS2.C: The Roles of Water in Earth's Surface Processes ScienceSaurus (Red Level) Earth Science, Water on Earth Science, Water Moves Around Earth, pp. 162–165 Earth Science, Slow Changes to Earth's Surface, pp. 168–171 Almanac. Maps,	ScienceSaurus (Red Level) Earth Science, Water on Earth, p. 160 Earth Science, Water Moves Around Earth, pp. 162–165 Earth Science, Slow Changes to Earth's Surface, pp. 168–171 Connections to Engineering, Technology, and Applications of Science Influence of Engineering, Technology, an Science on Society and the Natural World • Developing and using technology has impar on the natural world.
	pp. 380–385 ETSI.C: Optimizing the Design Solution Leveled Readers Unit 2 OL/ES How Do Engineers Solve Problems?, EN Ben's Engineering Project ScienceSaurus (Red Level) Doing Science, Designing Technology, pp. 74–77	Connections to Nature of Science Science Addresses Questions About the Natural and Material World • Scientists study the natural and material world. Leveled Readers Unit 1 OL/ES How Can I Think Like a Scientist?, EN How Scientists Explore Our World ScienceSaurus (Red Level) Doing Science, Science Is Observing, pp. 1–3

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## **K-2-ETS1 Engineering Design**

### Students who demonstrate understanding can: or tool. function as needed to solve a given problem. and weaknesses of how each performs. Science and Engineering Discipli Practices ETS1.A: Def Asking Questions and Defining Problems Delimiting E Problems **Developing and Using Models** ETS1.B: Dev Analyzing and Interpreting Data **Possible Sol** Leveled Readers ETS1.C: Opt Design Solut **Unit 1 OL/ES** How Can I Think Like a Scientist?, EN How Scientists Explore Leveled R Our World Unit 2 OL **Unit 2** OL/ES How Do Engineers Do Engine Solve Problems?, EN Ben's Problems? Engineering Project Engineerin ScienceSaurus (Red Level) ScienceSa Doing Science, Doing an Investigation, (Red Level pp. 8–25 Doing Scie Doing Science, Designing Technology, Investigation pp. 74–77 Doing Scier Technology, pp. 74–77

**GRADE 2** 

**K-2-ETS-1.** Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object

K-2-ETS-2. Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it

**K-2-ETS-3.** Analyze data from tests of two objects designed to solve the same problem to compare the strengths

nary Core eas	Crosscutting Concepts	
ining and ngineering	Structure and Function • The shape and stability of structures of natural and designed objects are related to	
eloping	their function(s).	
utions	Leveled Readers	
imizing the tion	<b>Unit 2</b> OL/ES How Do Engineers Solve Problems?, EN Ben's Engineering Project	GR
eaders /ES How ers Solve c, EN Ben's og Project	ScienceSaurus (Red Level) Doing Science, Designing Technology, pp. 74–77	ADE 2 21
aurus I)		
nce, Doing an n, pp. 8–25		
nce, Designing		



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## Science and Engineering Leveled Readers

**Grade 3 Teacher Guide** English and Spanish





GRADE 3

### **3-PS2 Motion and Stability: Forces and Interactions** Students who demonstrate understanding can: Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced 3-PS2-1. forces on the motion of an object. 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. 3-PS2-3. Ask guestions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other. 3-PS2-4. Define a simple design problem that can be solved by applying scientific ideas about magnets. Science and Engineering Practices Disciplinary Core Ideas Crosscutting Concepts Asking Questions and Defining **PS2.A: Forces and Motion** Patterns Problems • Patterns of change can be used to make **PS2.B:** Types of predictions. **Planning and Carrying Out** Interactions Investigations **Cause and Effect** Leveled Readers Cause and effect relationships are routinely Leveled Readers Unit 5 OL/ES How Do identified. Unit 1 OL/ES How Does a Scientist We Use Machines?, EN Cause and effect relationships are routinely Investigate?, EN Zoom into Science Building with Machines identified, tested, and used to explain change. ScienceSaurus (Red Level) ScienceSaurus Leveled Readers (Red Level) Doing Science, Science Is Observing, Unit 4 OL/ES How Do We Use рр. 2—7 Physical Science, Motion Machines?, EN Building with Machines and Forces, pp. 280–305 Doing Science, Doing an Investigation, pp. 8–25 ScienceSaurus (Red Level) Doing Science, Using Science Tools, Doing Science, Seeing Patterns in Data, pp. 50–67 pp. 34–35 -----\_\_\_\_\_ Connections to the Nature of Science Connections to Engineering, Technology, and Applications to Science Science Knowledge Is Based on **Empirical Evidence** Interdependence of Science, Engineering, Scientific Investigations Use a Variety and Technology of Methods Scientific discoveries about the natural world can often lead to new and improved Leveled Readers technologies, which are developed through **Unit 1 OL/ES** How Does a Scientist the engineering design process. Investigate?, EN Zoom into Science Leveled Readers ScienceSaurus (Red Level) **Unit 2** OL/ES What Is the Engineering Doing Science, Science Is Observing, Process?, EN Designing Amusement Park pp. 2–7 Rides Doing Science, Using Science Tools, ScienceSaurus (Red Level) pp. 50–67 Doing Science, Science and Technology, pp. 68–77

## 3-LS1 From Molecules to Organisms: Structures and Processes

## Students who demonstrate understanding can:

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.

Science and Engineering	Disciplinary Co	
Practices	Ideas	
Developing and Using Models	LS1.B: Growth and Development of Organisms	
Leveled Readers Unit 1 OL/ES How Does a Scientist		
Investigate?, EN Zoom into Science	Leveled Readers	
Unit 2 OL/ES How Does the Design	Unit 11 OL/ES H	
Process Help Us?, EN Designing	Change and Grov	
Amusement Park Rides	Surprising Adapt	
Connections to the Nature of Science	ScienceSaurus	
Scientific Knowledge is Based on	(Red Level)	
Empirical Evidence	Life Science, Livin	
Leveled Readers	Life Science, Plant	
<b>Unit 1 OL/ES</b> How Does a Scientist	Cycles, pp. 93–95	
Investigate?, <b>EN</b> Zoom into Science	Life Science, Anim	
ScienceSaurus (Red Level) Doing Science, Science Is Observing, pp. 2–7	Cycles, pp. 119–12	

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GRADE

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### Crosscutting Concepts

## Patterns

## leaders

nary Core

DL/ES How Things nd Grow?. EN Adaptations

## aurus

e. Livina 80-84 e, Plant Life 93–95 ce, Animal Life 119-125

• Patterns of change can be used to make predictions.

## Leveled Readers

**Unit 11 OL/ES** How Do Living Things Change and Grow?, EN Surprising Adaptations

## ScienceSaurus (Red Level)

Life Science, Living Things, pp. 80–84 Life Science, Plant Life Cycles, pp. 93–95 Life Science, Animal Life Cycles, pp. 119–125



3-LS2 Ecosystems: Interactions, Energy, and Dynamics				
Students who demonstrate understanding can: <b>3-LS2-1.</b> Construct an argument that some animals form groups that help members survive.				
Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts		
Engaging in Argument from Evidence Leveled Readers Unit 1 OL/ES How Does a Scientist Investigate?, EN Zoom into Science ScienceSaurus (Red Level) Doing Science, Share Your Results, p. 24	LS2.D: Social Interactions and Group Behavior Leveled Readers Unit 10 OL/ES How Are Living Things Connected to their Ecosystem?, EN Rainforest Adventure ScienceSaurus (Red Level) Life Science, Competing for Resources, pp. 132–133 Life Science, Behaviors Are Adaptations, pp. 140–141	<ul> <li>Cause and Effect</li> <li>Cause and effect relationships are routinely identified and used to explain change.</li> <li>Leveled Readers</li> <li>Unit 11 OL/ES How Are Living Things Connected to their Ecosystem?, EN Rainforest Adventure</li> <li>Science Saurus (Red Level)</li> <li>Life Science, Competing for Resources, pp. 132–133</li> <li>Life Science, Behaviors Are Adaptations, pp. 140–141</li> </ul>		

## **3-LS3 Heredity: Inheritance and Variation of Traits**

## Students who demonstrate understanding can:

3-L\$3-1.	Analyze and interpret data to provide evidence parents and that variation of these traits exists		
3-LS3-2.	Use evidence to support the	e explanation that	
Scien	ce and Engineering Practices	Disciplinar Ideas	
Analyzing an	d Interpreting Data	LS3.A: Inherita	
Constructing Designing So	Explanations and blutions	Traits LS3.B: Variatio	
Leveled Re	aders	Leveled Read	
Unit 1 OL/ Investigate ScienceSa Doing Scien pp. 20–21 Doing Scien pp. 22–23 Doing Scien	<b>ES</b> How Does a Scientist ?, <b>EN</b> Zoom into Science <b>urus (Red Level)</b> nce, Look at the Data, nce, Draw Conclusions, nce, Share Your Results, p. 24	Unit 11 OL/E Do Living Thin Change and G Surprising Ao ScienceSaur (Red Level) Life Science, C for Resources, pp. 132–133 Life Science, A Help Organism pp. 134–135 Life Science, B Are Adaptation pp. 136–139 Life Science, B Are Adaptation pp. 140–143	

ce that plants and animals have traits inherited from sts in a group of similar organisms.

t traits can be influenced by the environment.

3-LS4 Biological Evolu	ition: Unity and D	iversity		
<ul> <li>Students who demonstrate understanding can:</li> <li>3-LS4-1. Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.</li> <li>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.</li> <li>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.</li> <li>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.</li> </ul>				
Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts		
Analyzing and Interpreting Data Constructing Explanations and Designing Solutions Engaging in Argument from	LS2.C: Ecosystem Dynamics, Functioning, and Resilience LS4.A: Evidence of Common Ancestry and Diversity LS4.B: Natural Selection LS4.C: Adaptation LS4.C: Adaptation LS4.D: Biodiversity and Humans Leveled Readers Unit 10 OL/ES How Are Living Things Connected to their Ecosystem?, EN Rainforest Adventure Science Saurus (Red Level) Life Science, Extinct Animals, pp. 116–117 Life Science, Nature	<ul> <li>Cause and Effect</li> <li>Cause and effect relationships are routinely identified and used to explain change.</li> <li>Scale, Proportion, and Quantity</li> </ul>		
Evidence Leveled Readers Unit 1 OL/ES How Does a Scientist Investigate?, EN Zoom into Science ScienceSaurus (Red Level) Daina Sainas Look at the Data		<ul> <li>Observable phenomena exist from very short and very long time periods.</li> <li>Systems and System Models</li> <li>A system can be described in terms of components and their interactions.</li> <li>Leveled Readers</li> <li>Unit 10 OL/ES How Are Living Things</li> </ul>		
pp. 20–21 Doing Science, Draw Conclusions, pp. 22–23 Doing Science, Share Your Results, pp. 24		Connected to their Ecosystem?, EN Rainforest Adventure Science Saurus (Red Level) Life Science, Extinct Animals, pp. 116–117 Life Science, Nature Changes Habitats, pp. 144–145 Life Science, People Change Habitats, pp. 146–147 Earth Science, Fossils, pp. 186–187		
	Changes Habitats, pp. 144–145 Life Science, People Change Habitats, pp. 146–147 Earth Science, Fossils, pp. 186–187	Connections to Engineering, Technology, and Applications of Science Interdependence of Science, Engineering, and Technology Connections to Nature of Science Scientific Knowledge Assumes and Order and Consistency in Natural Systems Leveled Readers Unit 1 OL/ES How Does a Scientist Investigate?, EN Zoom into Science		

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## 3-ESS2 Earth's Systems

## Students who demonstrate understanding can:

<ul><li><b>3-ESS2-1.</b> Represent data in t during a particular</li><li><b>3-ESS2-2.</b> Obtain and combined</li></ul>	<ul><li>SS2-1. Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.</li><li>SS2-2. Obtain and combine information to describe climates in different regions of the world.</li></ul>		
Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	
Analyzing and Interpreting Data Obtaining, Evaluating, and Communicating Information	ESS2.D: Weather and Climate Leveled Readers	<ul><li>Patterns</li><li>Patterns of change can be used to make predictions.</li></ul>	
Leveled Readers Unit 1 OL/ES How Does a Scie Investigate?, EN Zoom into Scie ScienceSaurus (Red Level) Doing Science, Organizing Data, pp. 26–37 Science and Technology, Science Technology, pp. 356–363	entist ence Unit 8 OL/ES How Can We Describe Weather?, EN Double Danger: Thunderstorms and Tornadoes ScienceSaurus (Red Level) Earth Science, Weather and Climate, pp. 188–201	Leveled Readers Unit 8 OL/ES How Can We Describe Weather?, EN Double Danger: Thunderstorms and Tornadoes ScienceSaurus (Red Level) Earth Science, Weather and Climate, pp. 188–201	

3-ESS3 Earth and Huma	n Activity	
Students who demonstrate understandin 3-ESS3-1. Make a claim about the me hazard.	<b>g can:</b> rit of a design solution that red	luces the impacts of a weather-related
Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Engaging in Argument from Evidence	ESS3.B: Natural Hazards	Cause and Effect
Engaging in Argument from Evidence Leveled Readers Unit 1 OL/ES How Does a Scientist Investigate?, EN Zoom into Science ScienceSaurus (Red Level) Doing Science, Write Down Your Observations, pp. 18–19 Doing Science, Look at the Data, pp. 20–21 Doing Science, Draw Conclusions, pp. 22–23 Doing Science, Share Your Results, p. 24	ESS3.B: Natural Hazards Leveled Readers Unit 8 OL/ES How Can We Describe Weather?, EN Double Danger: Thunderstorms and Tornadoes ScienceSaurus (Red Level) Earth Science, Weather and Climate, pp. 188–201	<ul> <li>Cause and Effect</li> <li>Cause and effect relationships are routinely identified, tested, and used to test change.</li> <li>Leveled Readers <ul> <li>Unit 8 OL/ES How Can We Describe</li> <li>Weather?, EN Double Danger:</li> <li>Thunderstorms and Tornadoes</li> </ul> </li> <li>Science Saurus (Red Level) <ul> <li>Earth Science, Weather and Climate,</li> <li>pp. 188–201</li> </ul> </li> <li>Connections to Engineering, Technology, and Applications of Science</li> <li>Influence of Engineering, Technology, and Applications of Science</li> <li>Influence of Engineering, Technology, and the Natural Work <ul> <li>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).</li> <li>Connections to Nature of Science</li> </ul> </li> <li>Science is a Human Endeavour <ul> <li>Science affects everyday life.</li> </ul> </li> </ul>
		Leveled Readers Unit 1 OL/ES How Does the Design Process Help Us?, EN Designing Amusement Park Rides ScienceSaurus (Red Level) Doing Science, Science and Technology, pp. 68–77

## Science and Engineering Leveled Readers

## Grade 4 **Teacher Guide** English and Spanish





GRADE 4

## 4-PS3 Energy

## Students who demonstrate understanding can:

Asking Quest	Asking Questions and PS3.A: Definitions of Energy		Energy and Matter
Science and EngineeringDisciplinary CoreCrosscuttingPracticesIdeasConcepts		Crosscutting Concepts	
4-P\$3-4.	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.		
4-P\$3-3.	Ask questions and predict outcomes about the changes in energy that occur when objects collide.		
4-P\$3-2.	Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.		
4-P\$3-1.	Use evidence to construct an explanation relating the speed of an object to the energy of that object.		

## Asking Questions and **Defining Problems**

**Planning and Carrying Out Investigations** 

**Constructing Explanations** and Designing Solutions

## Leveled Readers

Unit 1 OL/ES How Do We Use Scientific Investigation and Reasoning?, EN Wild Science: Learning from the Cheetah Unit 2 OL/ES What

Is the Engineering Process?, EN City Water Tunnel 3

## ScienceSaurus (Blue Level)

Doing Science, Scientific Investigation, pp. 2–27 Doing Science, Using Scientific Tools and Equipment, pp. 38–59 Science, Technology, and Society, Science and Technology, pp. 356–363

**PS3.C: Relationship Between Energy** and Forces **PS3.D: Energy in Chemical Processes** and Everyday Life

**PS3.B: Conservation of Energy and** 

## Leveled Readers

**Energy Transfer** 

**Unit 4 OL/ES** How Do We Use Forms of Energy?, EN What Happens Under the Hood?

Unit 5 OL/ES How Do We Generate and Use Energy?, EN Energy on Demand: Making Electricity

**Unit 6 OL/ES** What Makes Objects Move?, EN Rocket Science

## ScienceSaurus (Blue Level)

Physical Science, Forces and Motion, pp. 268–283 Physical Science, Energy, pp. 284–287 Physical Science, Heat, pp. 288–294 Physical Science, Electricity, pp. 298–303 Physical Science, Light and Sound,

**ETS1.A: Defining Engineering** Problems

## Leveled Readers

pp. 308–317

**OL/ES** What Is the Engineering Process?

ScienceSaurus (Blue Level) Science, Technology, and Society, Science and Technology, pp. 356–368

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## **Energy and Matter**

• Energy can be transferred in various ways and between objects.

## Leveled Readers

Unit 4 OL/ES How Do We Use Forms of Energy?, EN What Happens Under the Hood?

-----Connections to Engineering, Technology, and Applications to Science

### Influence of Science, Engineering, and Technology on Society and the Natural World

• Engineers improve existing technologies or develop new ones.

## Leveled Readers

**Unit 2** OL/ES What Is the Engineering Process?, EN City Water Tunnel 3

ScienceSaurus (Blue Level)

Science, Technology, and Society, Science and Technology, pp. 356–363 Science, Technology, and Society, Science and Society, pp. 364–369 -----

Connections to the Nature of Science

## Science is a Human Endeavor

 Most scientists and engineers work in teams. Science effects everyday life.

## Leveled Readers

**OL/ES** How Do We Use Scientific Investigation and Reasoning?, EN Wild Science: Learning from the Cheetah

ScienceSaurus (Blue Level) Science and Technology, Science and Society, pp. 364–369

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

Students who 4-PS4-1.	demonstrate understanding Develop a model of waves t waves can cause objects to	<b>j can:</b> o describe patte
4-P\$4-2.	Develop a model to describ be seen.	e that light refle
4-PS4-3.	Generate and compare mult	iple solutions th
Scien	ce and Engineering Practices	Disciplin Ide
Developing a	nd Using Models	PS4.A: Wave
Constructing Designing So	Explanations and lutions	PS4.B: Electro Radiation
Leveled Readers Unit 1 OL/ES How Do We Use		PS4.C: Inform Technologies Instrumentati
Scientific investigation and Reasoning? Unit 2 OL/ES What Is the Engineering Process?		ScienceSau (Blue Level Earth Scienc p. 182
ScienceSaurus (Blue Level) Doing Science, Scientific Investigation, pp. 2–27 Doing Science, Using Scientific Tools and Equipment, pp. 38–59 Science and Technology, Science and Technology, pp. 356–363		Earth Scienc Currents, p. Physical Scie and Sound, p ETS1.C: Optim Design Soluti
		OL/ES What
Scientific Knowledge is Based on		Engineering
Leveled Readers Unit 1 OL/ES How Do We Use Scientific Investigation and Reasoning?		ScienceSat (Blue Level Science, Tecl and Society, Technology,
ScienceSau Doing Sciend pp. 15–17	<i>urus</i> (Blue Level) ce, Looking at Data,	

4

erns in terms of amplitude and wavelength and that

ecting from objects and entering the eye allows objects to

hat use patterns to transfer information.

iplinary Core Ideas	Crosscutting Concepts		
Vave Properties	Patterns		
lectromagnetic n	<ul> <li>Similarities and differences in patterns can be used to sort and classify natural phenomena.</li> </ul>		
nformation ogies and	<ul> <li>Similarities and differences in patterns can be used to sort and classify designed products.</li> </ul>		
entation	Cause and Effect		
e <i>Saurus</i> evel)	<ul> <li>Cause and effect relationships are routinely identified.</li> </ul>		
cience, Tsunamis,	Leveled Readers		
cience, Waves and s. p. 194	<b>Unit 1 OL/ES</b> How Do We Use Scientific Investigation and Reasoning?		
al Science, Light und, pp. 308–316	ScienceSaurus (Blue Level) Doing Science, Looking at Data, pp. 15–17		
Optimizing the Solution	Connections to Engineering, Technology, and Applications of Science		
Readers	Interdemendence of Science Engineering		
What Is the	and Technology		
ering Process?	Knowledge of relevant scientific concepts and		
eSaurus	research findings is important in engineering.		
evel)	Leveled Readers		
e, Technology, ciety, Science and logy, pp. 356–368	<b>OL/ES</b> How Do We Use Scientific Investigation and Reasoning?, <b>EN</b> Wild Science: Learning from the Cheetah		
	ScienceSaurus (Blue Level)		
	Science and Technology, pp. 356–357		

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

<b>GRADE 4</b>	
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## 4-ESS1 Earth's Place in the Universe

ock formations and fossils in rock layers to support an ape over time.

## Crosscutting Concepts

## C: The History of

Patterns

## ed Readers

7 OL/ES Earth's nging Surface and ral Resources, EN serving Earth's

## ceSaurus Level)

## • Patterns can be used as evidence to support an explanation. Unit 7 OL/ES Earth's Changing Surface and Natural Resources ScienceSaurus (Blue Level) Doing Science, Looking at Data, pp. 15–17 Earth Science, Earth's Changing Surface, pp. 170–186 -----Connections to Nature of Science Scientific Knowledge Assumes an Order and Consistency in Natural Systems • Science assumes consistent patterns in natural systems. Leveled Readers **Unit 7** OL/ES Earth's Changing Surface and Natural Resources ScienceSaurus (Blue Level)

Earth Science, Earth's Changing Surface, pp. 170–186

## 4-ESS2 Earth's Systems

## Students who demonstrate understanding can:

- **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.
- **4-ESS2-2.** Analyze and interpret data from maps to describe patters of Earth's features.

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Planning and Carrying Out Investigations	ESS2.A: Earth Materials and System	Patterns • Patterns can be used as evidence to support
Analyzing and Interpreting Data	ESS2.B: Plate Tectonics and Large-Scale System	an explanation.
Leveled Readers	Interactions	Cause and effect relationships are routinely
Unit 1 OL/ES How Do We Use Scientific Investigation and	ESS2.E: Biogeology	identified, tested, and used to explain change.
Reasoning?, EN Wild Science:	Leveled Readers	Leveled Readers
Learning from the Cheetah	Unit 7 OL/ES Earth's Changing Surface and	<b>Unit 7</b> OL/ES Earth's Changing Surface
ScienceSaurus (Blue Level)	Natural Resources	
Scientific Investigation, Collecting and Recording Data, pp. 10–14 Scientific Investigation, Looking at Data, pp. 15–17	<b>Unit 8 OL/ES</b> How Does the Water Cycle Affect Weather?	Earth Science, Earth's Changing Surface, pp. 170–186
Doing Science, Using Science Tools and Equipment, pp. 38–59	ScienceSaurus (Blue Level)	
	Earth Science, Earth's Changing Surface, pp. 170–186	
	Earth Science, Waves and Currents, p. 194	
	Earth Science, Features of the Ocean Floor, pp. 196–197	
	Almanac, Map of North America, p. 406	
	Almanac, Map of the World, p. 407	

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## 4-ESS3 Earth and Human Activity

## Students who demonstrate understanding can:

4-ESS3-1.	Obtain and combine information to describ
	resources and their uses affect the environ
4.FSS3.2	Generate and compare multiple solutions to

Science and Engineering Practices	Disciplina Idea
Constructing Explanations and Designing Solutions	ESS3.A: Natur Resources
Obtaining, Evaluating, and	ESS3.B: Natur
Communicating Information Leveled Readers Unit 1 OL/ES How Do We Use Scientific Investigation and Reasoning? Unit 2 OL/ES What Is the Engineering Process? ScienceSaurus (Blue Level) Scientific Investigation, Collecting and Recording Data, pp. 10–14 Science, Technology, and Society,	Leveled Rea Unit 7 OL/E Changing Su Natural Reso Conserving I Resources Unit 8 OL/E Does the Wa Affect Weath Hurricane!
Science and Technology, pp. 356–363	(Blue Level) Earth Science Changing Sur pp. 170–186 Natural Resou Environment, pp. 334–343 Natural Resou Environment, Resources, pp
	ETS1.B: Desig Solutions to El Problems
	Leveled Rea Unit 2 OL/ES the Engineer
	ScienceSau (Blue Level)

Science, Technology, and Society, Science and Technology, pp. 356–363 Science, Technology, and Society, Science and Society, pp. 364–369

be that energy and fuels are derived from natural ment.

reduce the impacts of natural Earth processes on humans.

## nary Core eas

## ıral

## ural Hazards

## eaders

'ES Earth's Surface and sources, EN g Earth's

## 'ES How Vater Cycle ther?, EN

## urus I)

ce, Earth's urface, 6

ources and the t, Pollution, 3

ources and the t, Conserving pp. 344–353

## igning Engineering

## eaders

ES What Is ering Process?

### urus I)

## Crosscutting Concepts

## **Cause and Effect**

- Cause and effect relationships are routinely identified and used to explain change.
- Cause and effect relationships are routinely identified, tested, and used to explain change.

## Leveled Readers

**Unit 7** OL/ES Earth's Changing Surface and Natural Resources

**Unit 8 OL/ES** How Does the Water Cycle Affect Weather?, **EN** Hurricane!

## ScienceSaurus (Blue Level)

Earth Science, Earth's Changing Surface, pp. 170–186

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.

## Influence of Science, Engineering, and Technology on Society and the Natural world.

- Over time, people's needs and wants change, as do their demands for new and improved technologies.
- Engineers improve existing technologies or develop new ones to increase their benefits, to decrease known risks, and to meet societal demands.

## Leveled Readers

**Unit 2** OL/ES What Is the Engineering Process?, EN City Water Tunnel 3

## ScienceSaurus (Blue Level)

Science, Technology, and Society, Science and Technology, pp. 356–363 Science, Technology, and Society, Science and Society, pp. 364–369



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## **Science and Engineering Leveled Readers** Grade 5 **Teacher Guide**

**English and Spanish** 





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## **5-PS1** Matter and Its Interactions

## Students who demonstrate understanding can:

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5-PS1-1.	Develop a model to describe that matter is made of particles too small to be seen.			
5-P\$1-2.	Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved.			
5-P\$1-3.	Make observations and measurements to identify materials based on their properties.			
5-PS1-4.	Conduct and investigation t new substances.	o determine whether the mixin	g of two or more substances results in	
Scien	ce and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	
Developing and Using Models Planning and Carrying Out Investigations		PS1.A: Structure and	Cause and Effect	
		Properties of Matter	Cause and effect relationships are routinely	
		PS1.B: Chemical	Identified, tested, and used to explain change.	
Using Mathematics and Computational Thinking		Reactions	Scale, Proportion, and Quantity	
		Leveled Readers	Natural objects exist from the very small to the immensely large	
Leveled Readers Unit 1 OL/ES What Do Scientists Do?, EN Into the Ocean Depths		Unit 3 OL/ES What Are	Chanderd units are used to measure and	
		the Physical Properties of Matter?, EN Clean Water	describe physical quantities such as weight, time, temperature and volume.	

## **Unit 2 OL /ES** How Do Engineers

## Sc

Solve Problems? EN Harnessing the	ScienceSaurus	Leveled Readers
Wind	(Blue Level)	<b>Unit 1 OL/ES</b> What Do Scientists Do?, EN Into the Ocean Depths
<i>cienceSaurus</i> (Blue Level) Doing Science, Scientific Investigation, pp. 2–27 Doing Science, Using Scientific Tools and Equipment, pp. 38–59 Doing Science, Using Tables and Graphs, pp. 60–73 Almanac, Numbers in Science, pp. 371–379 Almanac, Solving Math Problems in Science, pp. 380–385	Physical Science, Matter, pp. 242–259 Physical Science, Changes in Matter, pp. 260–267	<ul> <li>Unit 3 OL/ES What Are the Physical Properties of Matter?, EN Clean Water</li> <li>ScienceSaurus (Blue Level) Doing Science, Measuring Tools, pp. 38–50</li> <li>Connections to Nature of Science</li> <li>Scientific Knowledge Assumes an Order and Consistency in Natural Systems</li> <li>Science assumes consistent patterns in natural systems.</li> <li>Leveled Readers Unit 1 OL/ES What Do Scientists Do?, EN Into the Ocean Depths</li> <li>ScienceSaurus (Blue Level) Doing Science, Looking at Data, pp. 15–17</li> </ul>

## 5-PS2 Motion and Stability: Forces and Interactions

## Students who demonstrate understanding can:

## 5-PS2-1.

Science and Engineering	Disciplinary Core	Crosscutting
Practices	Ideas	Concepts
Engaging in Argument from Evidence Leveled Readers Unit 1 OL/ES What Do Scientists Do?, EN Into the Ocean Depths ScienceSaurus (Blue Level) Doing Science, Scientific Investigation, pp. 2–27	PS2.B: Types of Interactions Leveled Readers G5: Unit 4 OL/ES How Do Forces Affect Motion?, EN International Space Station ScienceSaurus (Blue Level) Life Science, Responding to Gravity, p. 97 Physical Science, Common Forces, pp. 270–274 Earth Science, Gravity and Orbits, p. 227	<ul> <li>Cause and Effect</li> <li>Cause and effect relationships are routinely identified and used to explain change.</li> <li>Leveled Readers</li> <li>G5: Unit 4 OL/ES How Do Forces Affect Motion?, EN International Space Station</li> <li>ScienceSaurus (Blue Level)</li> <li>Doing Science, Explaining Results, pp. 18–19</li> </ul>

Support an argument that the gravitational force exerted by Earth on objects is directed down.

5-PS3 Energy			
Students who demonstrate understandin5-PS3-1.Use models to describe tha maintain body warmth) was	<b>g can:</b> It energy in animals' food (used s once energy from the sun.	for body repair, growth, motion, and to	
Science and Engineering Disciplinary Core Crosscutting Practices Ideas Concepts			
Developing and Using Models Leveled Readers	PS3.D: Energy in Chemical Processes and Everyday Life	<ul> <li>Energy and Matter</li> <li>Energy can be transferred in various ways between objects</li> </ul>	
<b>Unit 1 OL/ES</b> <i>What Do Scientists Do?</i> <b>Unit 2 OL/ES</b> <i>How Do Engineers</i> <i>Solve Problems?</i>	LS1.C: Organization for Matter and Energy Flow in Organisms Leveled Readers Unit 11 OL/ES How Do Organisms and Their Environment Form an Ecosystem?, EN Predators of Shark River	Leveled Readers Unit 11 OL/ES How Do Organisms and Their Environment Form an Ecosystem?, EN Predators of Shark River ScienceSaurus (Blue Level) Life Science, Getting and Using Energy, pp. 77–81 Life Science, Ecosystems, pp. 130–138	
	ScienceSaurus (Blue Level) Life Science, Getting and Using Energy, pp. 77–81 Life Science, Ecosystems, pp. 130–138		

## 5-LS1 From Molecules to Organisms: Structures and Processes

## Students who demonstrate understanding can:

5-LS1-1.	Support an	argument that	plants	get the m
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Science and Engineering	Disciplinary Core	Crosscutting
Practices	Ideas	Concepts
Engaging in Argument from Evidence Leveled Readers Unit 1 OL/ES What Do Scientists Do?, EN Into the Ocean Depths ScienceSaurus (Blue Level) Doing Science, Scientific Investigation, pp. 2–27	LS1.C: Organization for Matter and Energy Flow in Organisms Leveled Readers Unit 11 OL/ES How Do Organisms and Their Environment Form an Ecosystem?, EN Predators of Shark River ScienceSaurus (Blue Level) Life Science, Photosynthesis, p. 80 Life Science, Ecosystems, pp. 130–138	<ul> <li>Energy and Matter</li> <li>Matter is transported into, out of, and within systems.</li> <li>Leveled Readers</li> <li>Unit 11 OL/ES How Do Organisms and Their Environment Form an Ecosystem?, EN Predators of Shark River</li> <li>ScienceSaurus (Blue Level)</li> <li>Life Science, Cells, Tissues, Organs, and Systems, pp. 99–107</li> <li>Life Science, Ecosystems, pp. 130–138</li> </ul>

materials they need for growth chiefly from air and water.

GRADE 5

5-LS2 Ecosystems: Interactions, Energy, and Dynamics			
Students who demonstrate understanding can:         5-LS2-1.       Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.			
Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting oncepts	
Developing and Using Models Leveled Readers	LS2.A: Independent Relationships in Ecosystems	<ul> <li>Systems and System Models</li> <li>A system can be described in terms of its components and their interactions.</li> </ul>	
Unit 1 OL/ES What Do Scientists Do? Connections to Nature of Science Science Models, Laws, Mechanisms, and Theories Explain Natural Phenomena • Science explanations describe the mechanisms for natural events. Leveled Readers	LS2.B: Cycles of Matter and Energy Transfer in Ecosystems Leveled Readers Unit 11 OL/ES How Do Organisms and Their Environment Form an Ecosystem?, EN Predators of Shark River	Leveled Readers Unit 11 OL/ES How Do Organisms and Their Environment Form an Ecosystem?, EN Predators of Shark River ScienceSaurus (Blue Level) Life Science, Cells, Tissues, Organs, and Systems, pp. 99–109 Life Science, Ecosystems, pp. 130–138	
Unit 1 OL/ES What Do Scientists Do?, EN Into the Depths ScienceSaurus (Blue Level) Doing Science, Scientific Investigation, pp. 1–22	ScienceSaurus (Blue Level) Life Science, Cells, Tissues, Organs, and Systems, pp. 99–109 Life Science, Ecosystems, pp. 130–138		

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## 5-ESS1 Earth's Place in the Universe

Students who	demonstrate understanding	g can:	
5-ESS1-1.	Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from Earth.		
5-E\$\$1-2.	Represent data in graphical shadows, day and night, an	displays to reveal patterns of o d the seasonal appearance of s	daily changes in length and direction of some stars in the night sky.
Scien	ce and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Analyzing and Engaging in A Leveled Re Unit 1 OL/I Do?, EN Inte ScienceSau Scientific Inv Recording D Scientific Inv pp. 15–17 Doing Scient pp. 60–73	d Interpreting Data Argument from Evidence aders ES What Do Scientists to the Ocean Depths Arus (Blue Level) restigation, Collecting and ata, pp. 10–14 restigation, Looking at Data, ce, Using Tables and Graphs,	ESS1.A: The Universe and Its Stars ESS1.B: Earth and the Solar System Leveled Readers Unit 10 OL/ES How Do the Sun, Earth, and Moon Move in Space?, EN To the Moon ScienceSaurus (Blue Level) Earth Science, Earth and Its Moon, pp. 218–225 Earth Science, The Solar System and Beyond, pp. 226–239	<ul> <li>Patterns</li> <li>Similarities and differences in patterns can be used to sort, classify, communicate and analyze simple rates of change for natural phenomena.</li> <li>Scale, Proportion, and Quantity</li> <li>Natural objects exist from the very small to the immensely large.</li> <li>Unit 10 OL/ES How Do the Sun, Earth, and Moon Move in Space?, EN To the Moon</li> <li>ScienceSaurus (Blue Level) Earth Science, Earth and Its Moon, pp. 218–225 Earth Science, The Solar System and Beyond pp. 226–239</li></ul>

## 5-ESS2 Earth's Systems

Unit 1 OL/ES What Do Scientists Do?

**Unit 2 OL/ES** How Do Engineers

ScienceSaurus (Blue Level)

Almanac, Numbers in Science,

Almanac, Solving Math Problems in

Doing Science, Scientific Investigation,

Doing Science, Using Tables and Graphs,

Leveled Readers

Solve Problems?

рр. 2<u>–</u>27

pp. 60–73

pp. 371–379

Science, pp. 380–385

## Students who demonstrate understanding can:

5-E\$\$2-1.	<ul> <li><b>5-ESS2-1.</b> Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.</li> <li><b>5-ESS2-2.</b> Describe and graph the amounts and percentages of salt water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.</li> </ul>		
5-E\$\$2-2.			
Science and Engineering Practices		Disciplinary Core Ideas	Crosscutting Concepts
Developing and Using Models		ESS2.A: Earth Materials	Scale and Proportion
Using Mathematics and Computational Thinking		ESS2.C: The Roles	Standard units are used to measure and describe physical quantities such as weight

Earth Science, Water on Earth, pp. 187–197

and volume. of Weather in Earth's Surface Processes Systems and System Models • A system can be described in terms of its Leveled Readers components and their interactions. Unit 7 OL/ES How Does Earth's Surface Leveled Readers Change? **Unit 7** OL/ES How Does Earth's Surface **Unit 9** OL/ES How Are Change? Climate and Weather **Unit 9 OL/ES** How Are Climate and Different? Weather Different? ScienceSaurus ScienceSaurus (Blue Level) (Blue Level) Earth Science, Earth's Structure, pp. 158–169 Earth Science. Earth's Earth Science, Earth's Changing Surface, Structure, pp. 158–169 pp. 170–183 Earth Science, Earth's Earth Science, Water on Earth, pp. 187–197 Changing Surface, pp. 170–183

## 5-ESS3 Earth and Human Activity

## Students who demonstrate understanding can:

**5-ESS3-1.** Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

Science and Engineering	Disciplir
Practices	Ide
Obtaining, Evaluating, and	ESS3.C: Hum
Communicating Information	on Earth Sys
Leveled Readers Unit 1 OL/ES What Do Scientists Do? Unit 2 OL/ES How Do Engineers Solve Problems? ScienceSaurus (Blue Level)	Leveled Re Unit 8 OL/ Can Conse Earth's Res EN Alterna Resources
ScienceSaurus (Blue Level) Doing Science, Scientific Investigation, pp. 2–27 Doing Science, Using Tables and Graphs, pp. 60–73 Almanac, Numbers in Science, pp. 371–379 Almanac, Solving Math Problems in Science, pp. 380–385	Resources ScienceSa (Blue Leve Natural Res the Environ Resources, Natural Res Environmer pp. 334–34 Natural Res Environmer Resources,

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**'ES** How ervation Save sources?, tive Energy

## urus I)

ources and ment, Natural pp. 320–333

ources and the It, Pollution, 3

ources and the it, Conserving pp. 344–354

### Crosscutting Concepts

## Systems and System Modes

• A system can be described in terms of its components and their interactions.

## Leveled Readers

**Unit 8 OL/ES** How Can Conservation Save Earth's Resources?, **EN** Alternative Energy Resources

## ScienceSaurus (Blue Level)

Natural Resources and the Environment, Natural Resources, pp. 320–333 Natural Resources and the Environment, Pollution, pp. 334–343

Natural Resources and the Environment, Conserving Resources, pp. 344–354

Connections to Nature of Science

## Science Addresses Questions About the Natural and Material World

• Science findings are limited to questions that can be answered with empirical evidence.

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3-5-ETS1 Engineering Design				
<ul> <li>Students who demonstrate understanding can:</li> <li><b>3-5-ETS1-1.</b> Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.</li> <li><b>3-5-ETS1-2.</b> 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.</li> </ul>				
<b>3-5-ETS1-3.</b> 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.         Science and Engineering       Disciplinary Core       Crosscutting				
Asking Question Problems Planning and Ca Investigations Constructing Ex Designing Solut Leveled Read Unit 1 OL/ES Do?, EN Into th Unit 2 OL/ES Solve Problem the Wind	arrying Out planations and tions lers What Do Scientists he Ocean Depths How Do Engineers as?, EN Harnessing	ETS1.A: Defining and Delimiting Engineering Problems ETS1.B: Developing Possible Solutions ETS1.C: Optimizing the Design Solution Leveled Readers Unit 2 OL/ES How Do Engineers Solve Problems?, EN Harnessing the Wind	<ul> <li>Influence of Engineering, Technology, and Science on Society and the Natural World</li> <li>People's needs and wants change over time, as do their demands for new and improved technologies.</li> <li>Engineers improve existing technologies or develop new ones to increase their benefits, decrease known risks, and meet societal demands.</li> <li>Leveled Readers Unit 2 OL/ES How Do Engineers Solve Problems?, EN Harnessing the Wind</li> </ul>	
Science Saura Doing Science, pp. 5–27 Science and Tea Technology, pp Science, Techno Science and Tea	<b>us (Blue Level)</b> Scientific Investigation, chnology, Science and . 356–363 ology, and Society, chnology, 356–363	ScienceSaurus (Blue Level) Science and Technology, Science and Technology, pp. 356–363 Science, Technology, and Society, Science and Technology, pp. 356–363	Science Saurus (Blue Level) Science and Technology, Science and Technology, pp. 356–363 Science, Technology, and Society, Science and Technology, pp. 356–363 Science, Technology, and Society, Science and Society, pp. 364–369	



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